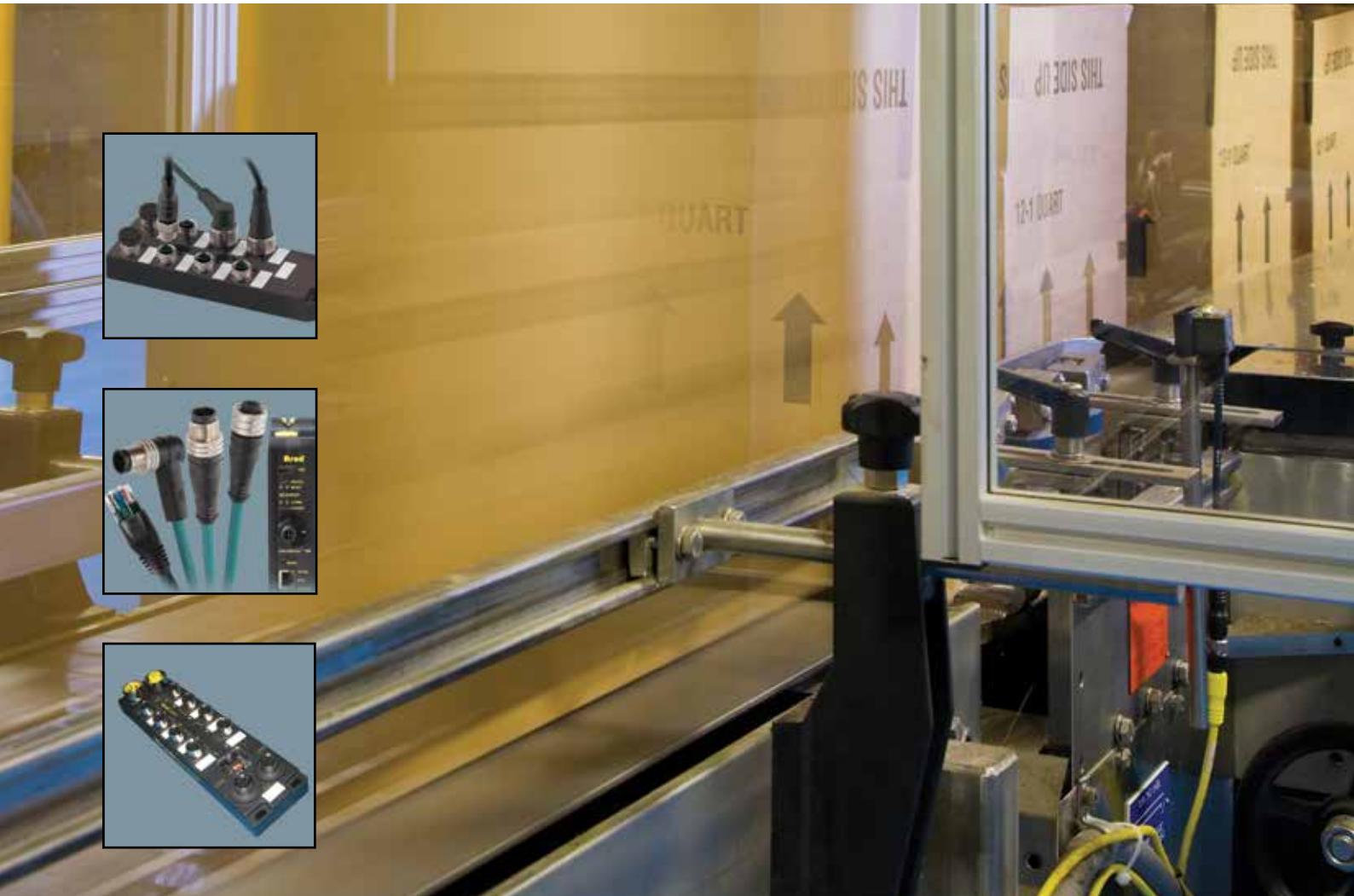


# Brad® AUTOMATION ➤ INDUSTRIAL IO DESIGNER GUIDE

*European Core Program*



**molex®**



# **TOTAL SYSTEM SOLUTION** >

Molex® is a leading one-source supplier of interconnect products. Our team of highly skilled experts is focused on the design, development and distribution of innovative product solutions that touch virtually every walk of life. The Molex® product portfolio is among the world's most extensive, with over 100,000 reliable products. Because our product line includes automation products for passive media, network media and power applications, Molex® can interconnect an entire automation infrastructure—one total system solution from a global company dedicated to meeting your total system needs. Molex® utilizes extensive worldwide resources to meet customer needs on a local, regional and global level. Molex® offers well-established sales, product development, manufacturing and logistics resources in Asia, Europe and the Americas.

# The products you need... when and where you need them.

## The Brad® Core Program

- Molex® supports one of **the largest portfolios of connectivity and wiring solutions** in the industrial market for automotive manufacturing, automated machine tools, food and beverage, material handling and packaging, commercial vehicles and solar applications.
- The core program is part of this portfolio that is **focused on the standard requirements** related to automation in the European market and highlights the active and passive IO modules and the related connectivity products for installation in harsh environments.
- Molex® commits to timely availability of all parts listed here in this core program and can propose dedicated delivery process to adapt the timings or the package of the solution chosen by our customers.
- Molex® commits to **supporting its customers** by helping them choose the right network as well as the most optimized infrastructure solution for their application. The Molex® tech support team also supports its customers in selecting corresponding parts from the complete portfolio or designing customer-dedicated solutions and prototyping.
- Beyond all part numbers available in this catalog dedicated to the standard IO interconnectivity, Molex® offers a high customizability of all parts (length, labeling, further connector variations...) as well as a huge range of complementary products that would cover all aspects of the automation infrastructures.

Molex® has the right solution for your automation application!

# Find the Latest Innovations and Information at **Molex.com**

For the most in-depth and up-to-date information on all our products, visit Molex.com. It's designed to help you get more done in less time with advanced search capabilities, 3D models, product specifications, easy sample ordering and more.



Molex.com provides a first stop for comprehensive overviews of our industrial products. Some of the tools you'll find are:

#### **Capabilities Videos**

Short online videos highlight key industry products, as well as our unique cross-functional design and manufacturing capabilities.

#### **Featured Products**

To find out about new products that can take your design to the next level, look no further than this convenient product spotlight.

#### **Other Time-Saving Site Features**

##### **Monthly E-nouncements**

Electronic newsletter keeps you up-to-date on our latest innovations

##### **Favorite Products Feature**

Lets you select and save up to 200 products as you browse

##### **Electrical Testing Models and Data**

Available on an array of products in our "Signal Integrity" section

##### **New Videos, Webinars, Articles and More**

Available right from our home page

##### **Detailed Application Pages**

##### **Instant Access to Product Specs**

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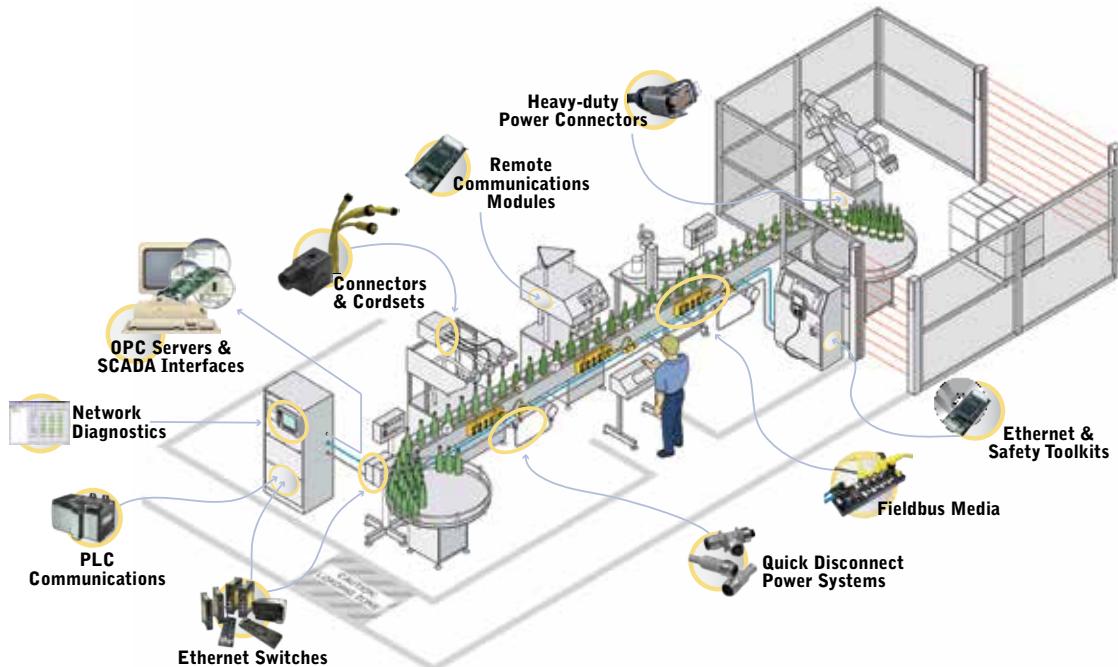
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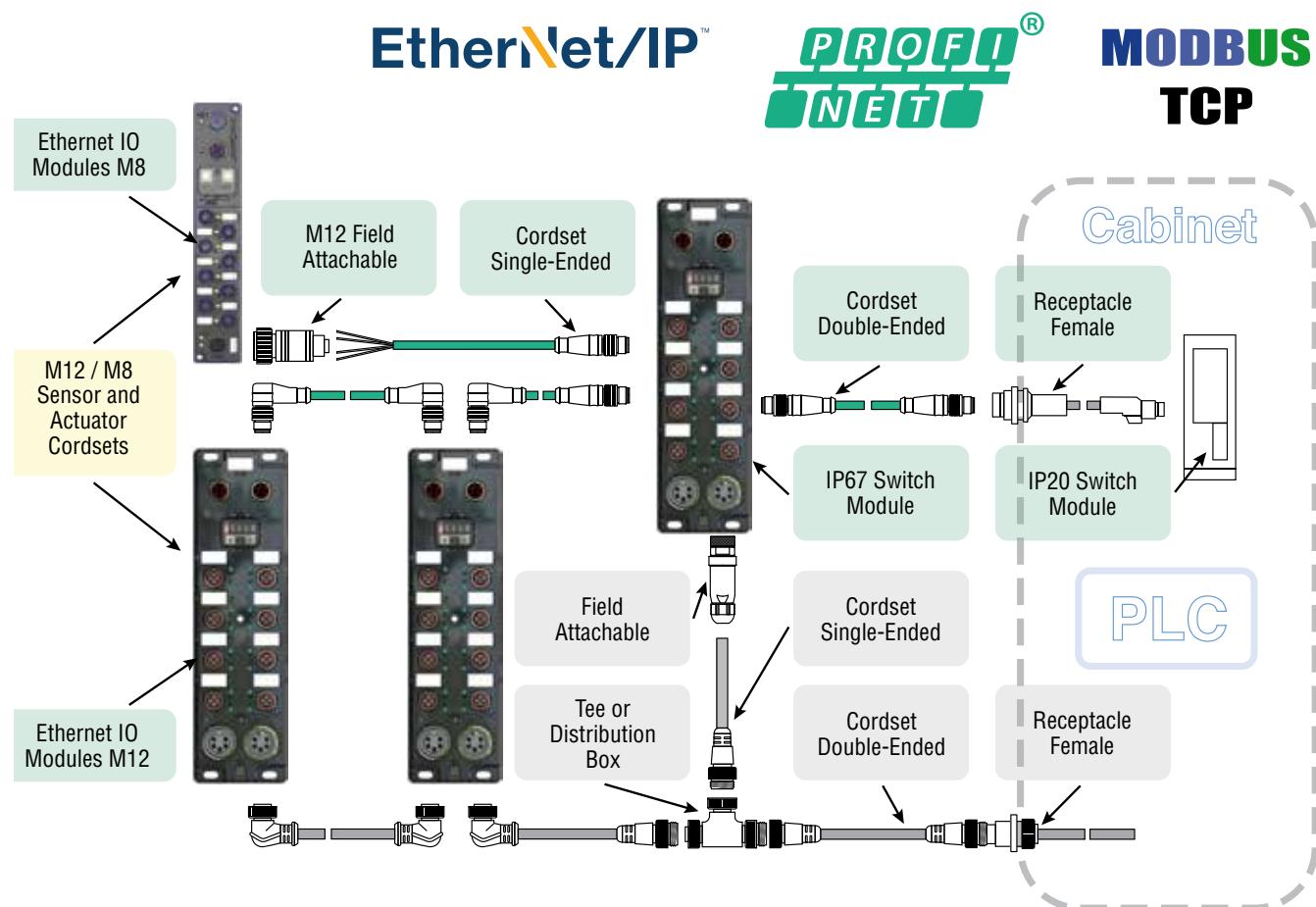
## Complete Solution For Automation Infrastructures In Harsh Environments



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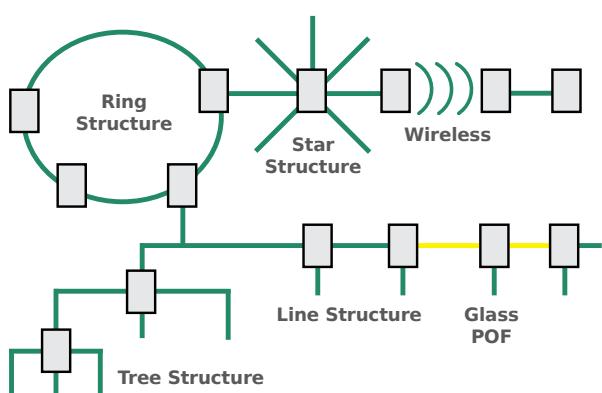
IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications.

## Ethernet and 7/8" Power Distribution Architecture



Ethernet in combination with the industrial protocols like PROFINET or EtherNet/IP provide deterministic behavior for machine and process control applications with only COTS components.

The transition from the fieldbus to the Ethernet communication technologies helps to simplify the industrial infrastructures and enhance the management and maintenance of the devices providing a significant cost saving and performance improvement.



### Type of Network

Multi station network  
CSMA/CD – Carrier Sense Multiple Access with Collision Detection

### Physical Media

Shielded 2 or 4 twisted pairs, AWG22 (PROFINET)  
RJ45 or M12 D-Code Connectivity

### Network topology

Point to point communication  
Star topology with switches  
Daisy chain through device integrated  
3 ports switches  
Ring and redundancy topology protocol dedicated functionalities

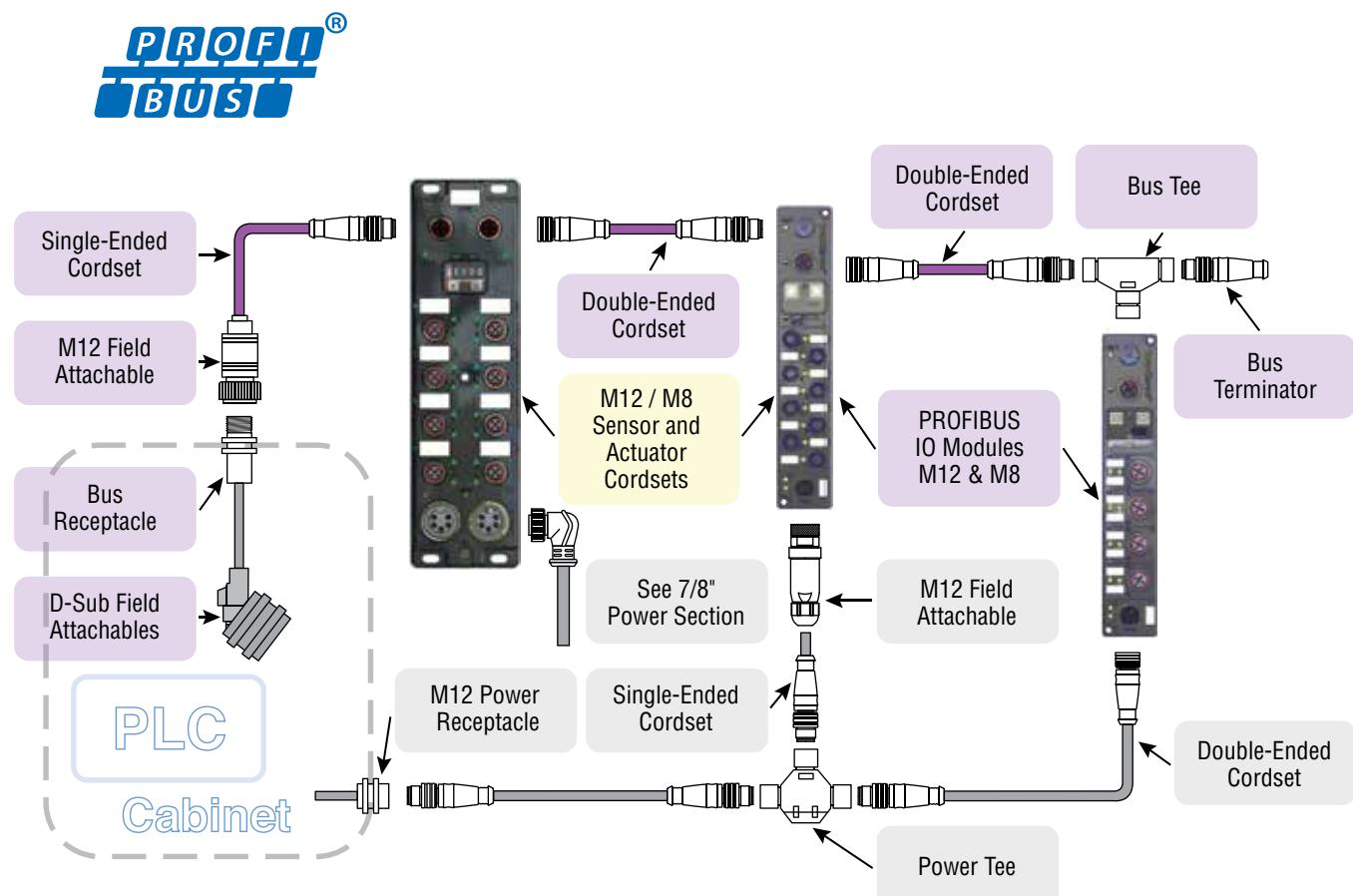
### Maximum distance

100m between two devices  
4 interconnection between 2 devices allowed  
No termination required

### Power and Communication

Power is supplied separately from network communication

## PROFIBUS and M12 Power Distribution Architecture



PROFIBUS-DP (Decentralized Periphery) is a device level bus that supports both analog and discrete signals. It permits Mono-master or Multi-master systems, which provides a high degree of flexibility during system configurations.

PROFIBUS allows all automation devices, sensors, actuators, PLC's, etc. to communicate at speeds from 9.6 Kbps to 12 Mbps over distances from 100 to 1,200 meters.

### Type of Network

Serial Device Bus – RS485  
Cyclic master-slave communication (uses token passing sequence)

### Physical Media

Shielded twisted pair, AWG 22.  
D-Sub9, M12 B-Code connectivity

### Network topology

Bus Topology, no drop line allowed

### Maximum Devices

Max. 32 Stations per PROFIBUS segment that can be extended with repeaters to 126 Stations on one bus (maximum of 244 Bytes input and output possible for each slave)

### Maximum distance

93.75Kbps and less – 1200 meters  
500Kbps – 400 meters  
1.5Mbps – 200 meters  
12Mbps – 100 meters

### Power and Communication

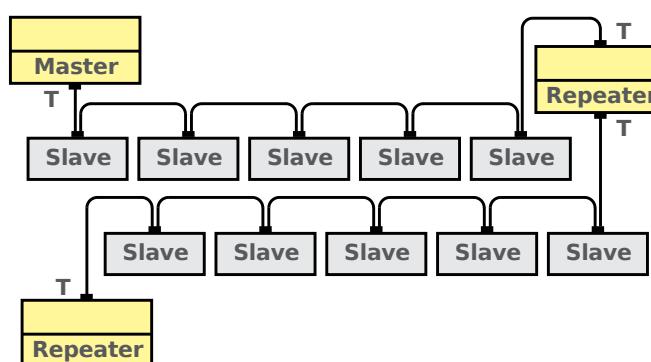
Power is supplied separately from communications bus.

### Communication Methods

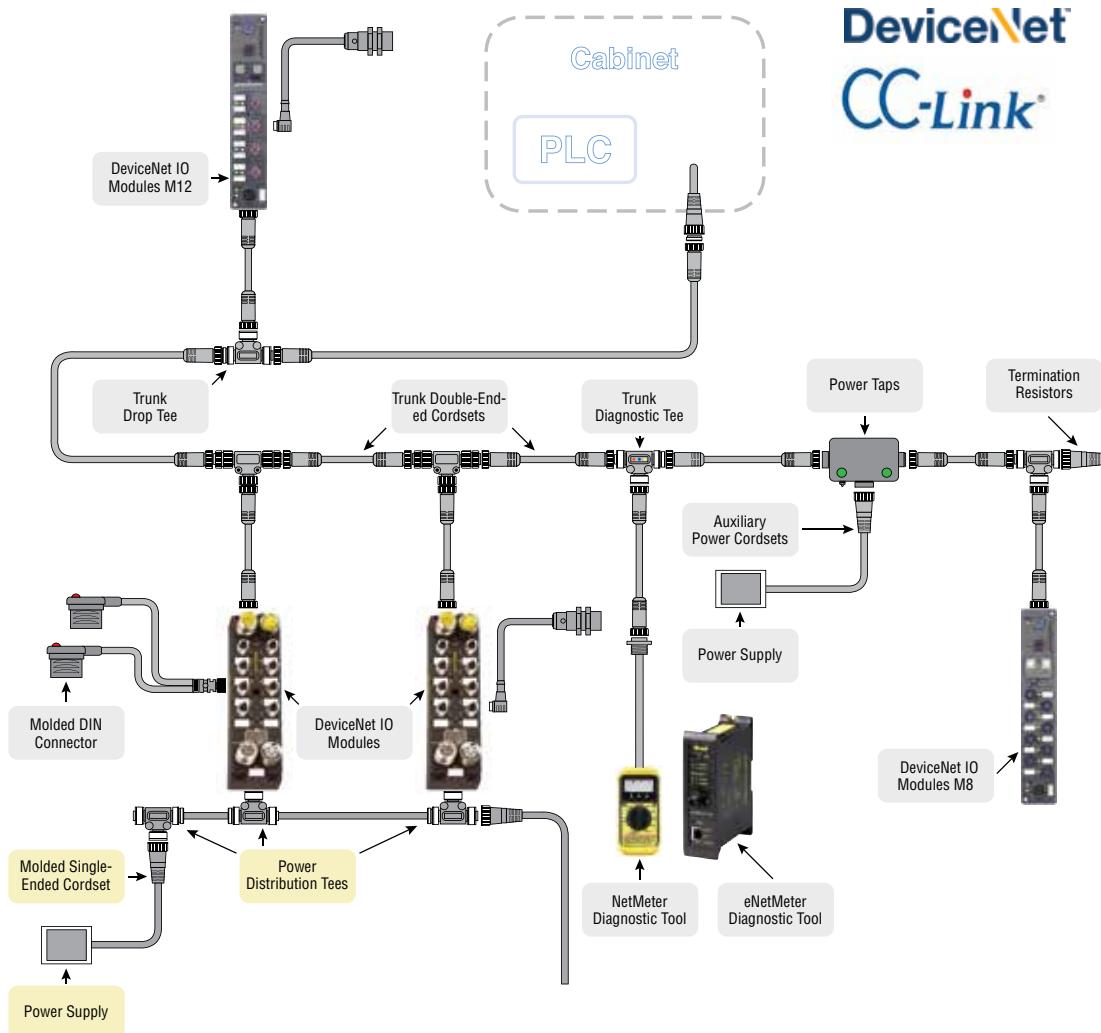
Peer-to-peer, multicast or cyclic master-slave (uses token passing sequence).

### Termination

Terminating resistor on both ends of a segment via the D-Sub integrated resistor or the M12 terminating resistor.



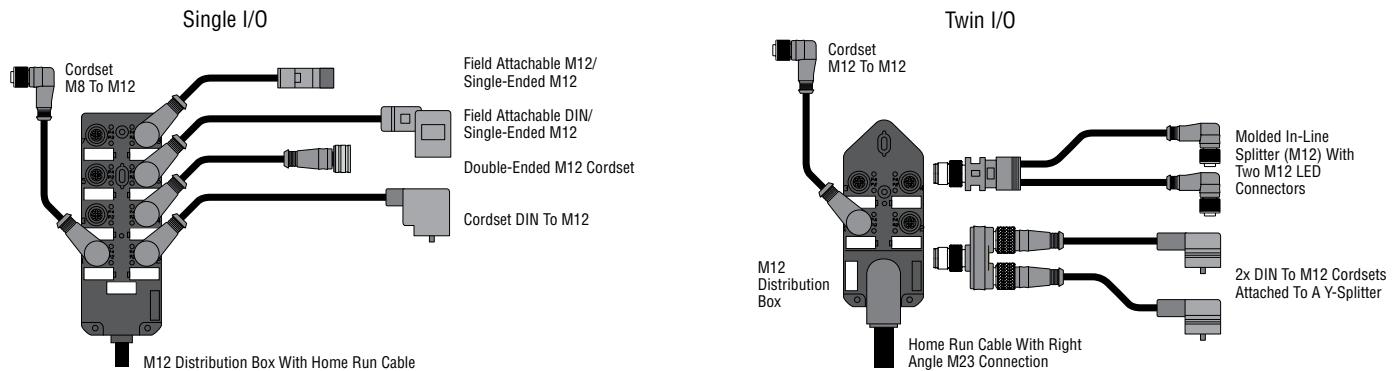
## DeviceNet and CC-Link Architecture Solutions



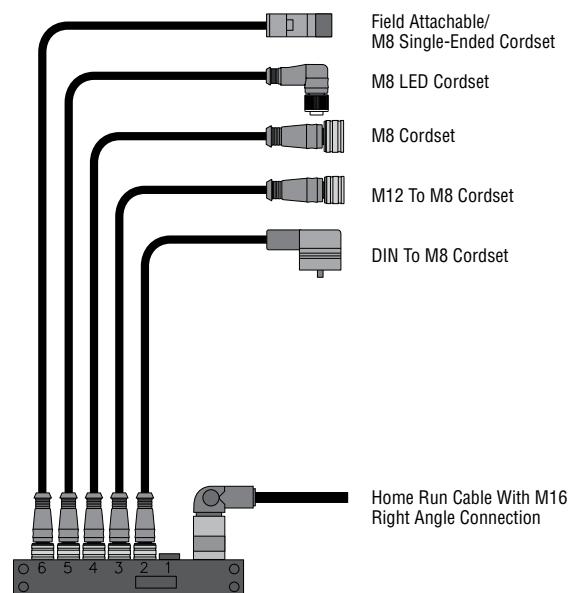
**Molex also provides infrastructure solutions for the support of DeviceNet and CC-Link protocols.**

**For more information please visit [www.Molex.com](http://www.Molex.com)**

## M12 Sensor Actuator Interconnection



## M8 Sensor Actuator Interconnection

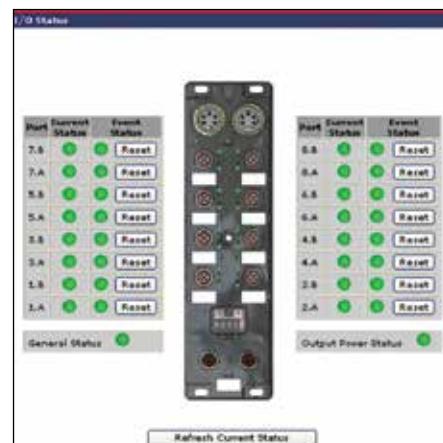


## Ethernet I/O reliable connections in harsh environments.



## Brad® HarshIO Modules

### Built-in Web Server with Password Protection



### Worldwide Unique Feature: Quicker Setups and More Uptime through Secure Connections Using the Brad® Ultra-Lock® Patented Connection System

- One simple push delivers a secure, consistent seal each and every time
- Eliminates connector-related intermittent signals that lead to costly production downtime
- Quick change-overs can now be a reality

### React to Problems Sooner Using Easy-to-Read Diagnostics

- Visible LEDs provide maintenance personnel with ability to easily determine I/O, module and network status
- Scrolling 4-character display for IP addressing and module status
- Built-in web server for remote monitoring, configuration and diagnostics

### Reduce Infrastructure Costs with Built-in 2-Port Ethernet Switch

- 10/100 Mbps auto-sensing
- Supports straight or crossover Ethernet cable

### Reduce Inventory Costs Using Configurable I/O

- User configurable – 16 points of digital I/O can be set as either an Input or Output (also available in fixed I/O configurations)

### Save Time Configuring or Replacing I/O Modules

- On PROFINET or EtherNet/IP, configuration setup can be downloaded on the HarshIO directly from the Master, IO-Controller or Scanner
- With simple-to-use push buttons, quickly adjust the last three octets of the IP address

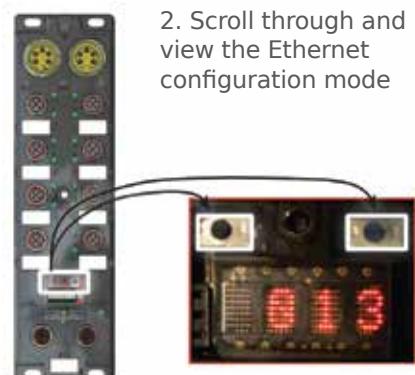
### Save Energy by Minimizing Power Supply

- On PROFINET, HarshIO supports PROFlenergy service, allowing the IO-Controller to minimize power supply to the connected HarshIO Module(s)

### Push Buttons

Two push buttons located above the display window are used to:

1. Quickly adjust the last octet or last 3 characters of the module's IP address
2. Scroll through and view the Ethernet configuration mode



One cable for most applications.



## Brad® Weld Slag & Oil Resistant Cable

### Extended characteristics and resistance

The Weld-Slag and Oil-Resistant (WSOR) cable delivers high flex and torsion performance and supports a wide range of temperatures (from -40°C to 90°C). Certified FT1 flame retardant, UV, Hydrolysis and Tear resistant, this cable would withstand the most severe conditions.

### One solution for various applications

The cable is designed for use in multiple harsh-environment applications, in the automotive and robotic area, from welding to cutting-oil environments, conveying and most machine applications and can be terminated to a variety of industry-standard connectors.



### Optimized and cost effective connectivity solution

As manufacturer of this cable range, Molex can control every step and cost of the production to provide price effective cordsets. Choosing this polyvalent WSOR cable helps also to reduce inventory costs. The WSOR cable can also be purchased raw by Molex for the termination on site.

### Large range of cable qualities

This designer guide focus on cordsets with the WSOR cable quality. Molex provides additional cable standards to cover further market requirements. All standards have UL/CSA omologation.

Cable	PVC	WSOR	PUR
0,34mm <sup>2</sup>	E03	B30	H09
0,25mm <sup>2</sup>	E02	B41	H08
1,5mm <sup>2</sup>		B35	B21
PROFINET		12	11

#### PVC

Very cost effective cable  
Less demanding environment  
Good water resistance  
Ideal for conveying, packaging application

#### WSOR

Cost optimized cable  
Wide application range  
Oil and weld slag resistance  
Ideal for automotive, robotic and machining application

#### PUR

High End range  
Low Smoke Zero halogen  
Good oil resistance  
Ideal for public transport and mining application

### WSOR cable spool

The WSOR cable is available from Molex as raw cable spool in 100m or 200m version. The order number can be found in each section.

On request the cable can also be ordered in 5km bulk.



### Knurled/Hex Nut for WSOR cordsets

All WSOR M12 and M8 cordsets have a knurled/hex coupling nut to use with dynamometric torque tools to make sure that your connection is perfectly tight.



#### M8 Torque tool (wrench size 9)

Engineering No.	Standard Order No.
—	1203035017

#### M12 Torque tool (wrench size 13)

Engineering No.	Standard Order No.
—	1203035018

**IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications with PROFINET IO communication capabilities.**

## Specifications

PROFINET IO-Device, Conformance class B

IP addressing: DCP or static

Real-Time I/O update, up to 1 ms

Services: PROFlenergy, SNMP V1/V2/V3, LLDP Send/Rec, MRP, I&M, Easy Device replacement, Fast Start-Up (FSU) < 500ms

GSDML configuration file (downloadable via integrated Web server)

Embedded display for diagnostic

Grounding isolation between Input/logic and Output Power(1)

Operating Temperature: -25 to 70°C

Storage Temperature: -40 to +90°C

Approvals: CE, UL, cUL, RoHS, REACH, PNO Certified



## Brad® PROFINET HarshIO Modules



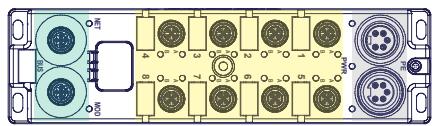
Brad® HarshIO IP67 PROFINET Modules

## User manual and GSDML files to download under:

[www.molex.com](http://www.molex.com) (Select Automation & Industrial / Brad Automation / Support & Downloads)

## Ordering Information

### Brad® HarshIO IP67 PROFINET Module 60mm M12



#### Connectivity

<b>Ethernet:</b> 2x Female M12 4P D-code Built-in 2 port switch Ultra-Lock® compatible	<b>Inputs/Outputs:</b> 8x Female M12 5P A-code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra- Lock® compatible	<b>Power:</b> 1x Male 7/8" 4 or 5 Pole 1x Fem. 7/8" 4 or 5 Pole Voltage: 24V Input 8 Amps
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Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
7/8" 5 Pole	16I	TCDEP-8D0P-D1U-G	112095-5048
	8I/8O	TCDEP-888P-D1U-G	112095-5050
	12I/4O	TCDEP-8B4P-D1U-G	112095-5051
	16O	TCDEP-80DP-D1U-G	112095-5049
	User Config.	TCDEP-8YYX-D1U	112095-5037
7/8" 4 Pole <sup>(2)</sup>	16I	TCDEP-8D0P-DYU-G	112095-5052
	8I/8O	TCDEP-888P-DYU-G	112095-5053
	12I/4O	TCDEP-8B4P-DYU-G	112095-5054
	16O	TCDEP-80DP-DYU-G	112095-5055

(1) Not available on User Configurable IO model

(2) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure. For more information consult our web page or industrial automation catalog.

The compact 30mm wide version is designed to be installed in narrow areas, and is perfect for packaging and pick-and-place applications. The lower port count of this model provides a cost-effective module.

## Specifications

PROFINET IO-Device, Conformance class B

IP addressing: DCP or static

Real-Time I/O update, up to 1 ms

Services: SNMP V1/V2/V3, LLDP Send/Rec, I&M, Easy Device replacement,

Fast Start-Up (FSU) < 500ms

Grounding isolation (1) between Input/logic and Output Power

Operating Temperature: -25 to 70°C

Storage Temperature: -40 to +90°C

Approvals: CE, UL, cUL, Rohs, REACH, PNO Certified



## Brad® PROFINET HarshIO Modules

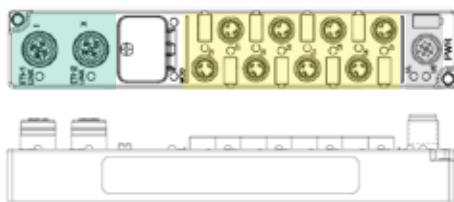


Brad® HarshIO IP67 PROFINET Modules

### User manual and GSDML files to download under:

[www.molex.com](http://www.molex.com) (Select Automation & Industrial / Brad Automation / Support & Downloads)

## Brad® HarshIO IP67 PROFINET Module – 30mm M8

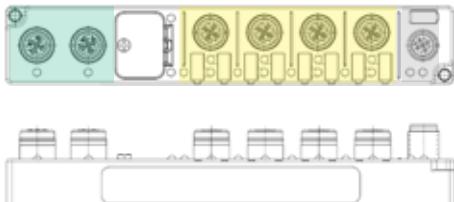


Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
M12 5 Pole	8I	TBDEP-880P-D84-G	112095-5064
	4I/4O	TBDEP-844P-D84-G	112095-5065
	8O	TBDEP-808P-D84-G	112095-5066
	User Config.	TBDEP-8YYP-D84	112095-5067

### Connectivity

<b>Ethernet:</b> 2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	<b>Inputs/Outputs:</b> 8x Female M8 3 Poles Single IO signal per port Inputs 24V max. 140mA Outputs 24V max. 1,4A	<b>Power:</b> 1x Male M12 5 Pole A-Code Voltage: 24V Input & Output, max. 4 Amps
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## Brad® HarshIO IP67 PROFINET Module – 30mm M12



Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
M12 5 Pole	8I	TBDEP-480P-D8U-G	112095-5076
	4I/4O	TBDEP-440P-D8U-G	112095-5077
	8O	TBDEP-408P-D8U-G	112095-5078
	User Config.	TBDEP-4YYP-D8U	112095-5079

(1) Not available on User Configurable IO models.

### Connectivity

<b>Ethernet:</b> 2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	<b>Inputs/Outputs:</b> 4x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 1,4A Ultra-Lock compatible	<b>Power:</b> 1x Male M12 5 Pole A-Code Voltage: 24V Input & Output, max. 4 Amps
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**IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications with EtherNet/IP communication capabilities.**

## Specifications



### EtherNet/IP Adapter

IP address: DHCP, Static Address, and 0xF5/0xF6 objects  
 Real-Time I/O update, up to 1 ms  
 Services: Automatic Conflict Detection (ACD), QuickConnect < 500ms (QC Class A device)  
 EDS configuration file (downloadable via CIP File Service)  
 Embedded display for diagnostic  
 Grounding isolation<sup>1</sup> between Input/logic and Output Power  
 Operating Temperature: -25 to +70°C  
 Storage Temperature: -40 to +90°C  
 Approvals: CE, UL, cUL, RoHS, REACH, ODVA Certified

## Brad® EtherNet/IP HarshIO Modules



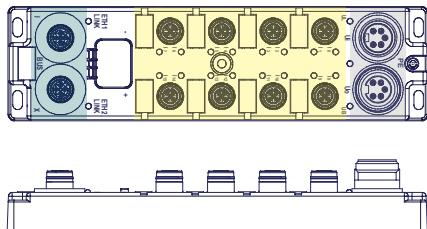
Brad® HarshIO IP67 EtherNet/IP Modules  
 60mm and 30mm

### User manual and EDS files to download under:

[www.molex.com](http://www.molex.com) (Select Automation & Industrial / Brad Automation / Support & Downloads)

## Ordering Information

### Brad® HarshIO IP67 EtherNet/IP Module – 60mm M12



#### Connectivity

<b>Ethernet:</b> 2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	<b>Inputs/Outputs:</b> 8x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra-Lock® compatible	<b>Power:</b> 1x Male 7/8" 4 or 5 Pole 1x Fem. 7/8" 4 or 5 Pole Voltage: 24V Input & Output, max. 8 Amps
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Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
7/8" 5 Pole	16I	TCDEI-8D0P-D1U-G	112095-5060
	8I/8O	TCDEI-888P-D1U-G	112095-5061
	12I/4O	TCDEI-8B4P-D1U-G	112095-5063
	16O	TCDEI-80DP-D1U-G	112095-5062
	User Config.	TCDEI-8YYX-D1U	112095-5011
7/8" 4 Pole <sup>(2)</sup>	16I	TCDEI-8D0P-DYU-G	112095-5040
	8I/8O	TCDEI-888P-DYU-G	112095-5041
	12I/4O	TCDEI-8B4P-DYU-G	112095-5043
	16O	TCDEI-80DP-DYU-G	112095-5042
	User Config.	TCDEI-8YYX-DYU	112095-5020

(1) Not available on User Configurable IO model.

(2) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure.  
 For more information consult our web page or industrial automation catalog.

**Brad® HarshIO IP67 Modules for EtherNet/IP featuring CIP Safety technology deliver significant operational advantages of protection and versatility for industrial safety applications.**

## Specifications

**EtherNet/IP™ CIP Safety™**

EtherNet/IP CIP Safety IO Adapter

For use in safety applications, up to SIL3 and PLe; Mission time > 20 years

Real-Time I/O update, up to 10 ms

Output Bipolar version: max. 2A per dual channel

Support ODVA CIP Safety I/O generic profiles

Services: Automatic Conflict Detection (ACD), DLR Client

EDS upload file (downloadable via CIP File Service)

Integrated Web server for diagnostics

IP address: DHCP, Static Address and EtherNet/IP 0xF5/0xF6 objects

Grounding isolation between Input/logic and Output Power

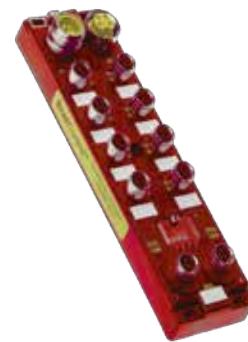
Easy commissioning thanks to Molex SNCT software and RA RSLogix™ 5000

Operating Temperature: -25 to +70°C

Storage Temperature: -40 to +90°C

Approvals: CE, UL, cUL, Rohs, REACH, TUV(2), ODVA Certified

**Brad® EtherNet/IP CIP Safety HarshIO Modules**



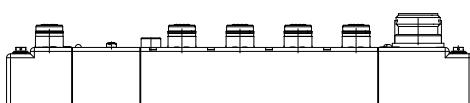
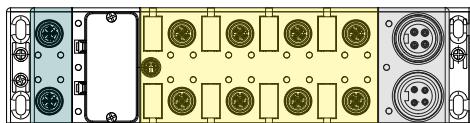
Brad® HarshIO IP67 EtherNet/IP CIP Safety Modules

## User manual and GSDML files to download under:

[www.molex.com](http://www.molex.com) (Select Automation & Industrial / Brad Automation / Support & Downloads)

## Ordering Information

### Brad® HarshIO IP67 EtherNet/IP CIP Safety



## Connectivity

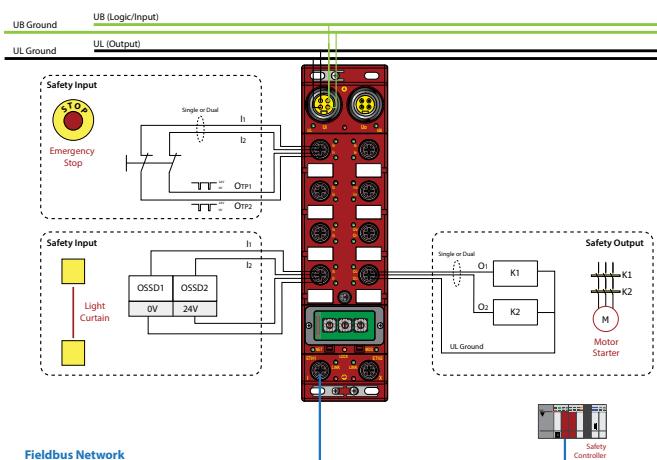
**Ethernet:**  
2x Female M12 4P  
D-code  
Built-in 2 port  
switch Ultra-Lock®  
compatible

**Inputs/Outputs:**  
8x Female M12  
5P A-Code Dual IO  
signal per port  
Inputs 24V max.  
140mA Outputs 24V  
max. 2A  
Ultra-Lock®  
compatible

**Power:**  
1x Male 7/8"  
4 or 5 Pole  
1x Fem. 7/8"  
4 or 5 Pole  
Voltage: 24V Input  
& Output, max.  
8 Amps

Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
7/8" 5 Pole	12I/4O	TCDEC-8B4P-D1U-G	112095-5111
	12I/4O (Bipolar)	TCDEC-8B4B-D1U-G	112095-5112
7/8" 4 Pole <sup>(1)</sup>	12I/4O	TCDEC-8B4P-DYU-G	112095-5107
	12I/4O (Bipolar)	TCDEC-8B4B-DYU-G	112095-5108

(1) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure.  
For more information consult our web page or industrial automation catalog.



**IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications with Modbus TCP communication capabilities.**

**Brad®  
Modbus TCP  
HarshIO Modules**

## Specifications

Modbus TCP server  
Speed: 10/100 Mbps. (auto-negotiation, full duplex)  
Data Access: I/O data  
IP address: DHCP, Static Address  
Embedded display for diagnostic  
Operating Temperature: -25 to +70°C  
Storage Temperature: -40 to +90°C  
Approvals: CE, UL, cUL, Rohs, REACH, Schneider Certified

**MODBUS  
TCP**



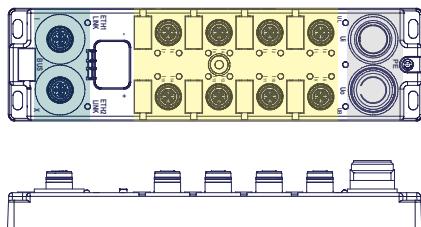
Brad® HarshIO IP67 Modbus TCP Module 60mm

**User manual to download under:**

[www.molex.com](http://www.molex.com) (Select Automation & Industrial / Brad Automation / Support & Downloads)

## Ordering Information

### Brad® HarshIO IP67 Modbus TCP/IP Module – 60mm M12



Power Type	Input/Output	Engineering No.	Standard Order No.
7/8" 5 Pole	User Config.	TCDEM-8YYX-D1U	112095-0009
7/8" 4 Pole <sup>(1)</sup>	User Config.	TCDEM-8YYX-DYU	112095-5038

(1) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure. For more information consult our web page or industrial automation catalog.

## Connectivity

<b>Ethernet:</b> 2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	<b>Inputs/Outputs:</b> 8x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra- Lock® compatible	<b>Power:</b> 1x Male 7/8" 4 or 5 Pole 1x Fem. 7/8" 4 or 5 Pole Voltage: 24V Input & Output, max. 8 Amps
--	---	---

**IP67 rated fast Ethernet switches for harsh environments are designed for direct machine mount applications.**

## Brad® Harsh-Duty Ethernet Switches

### Specifications

Unmanaged IP67 switches

Speed 10/100Mbps auto negotiation, full or half duplex

Auto-learning with no software or configuration required

Operating Temperature: -40 to +75°C

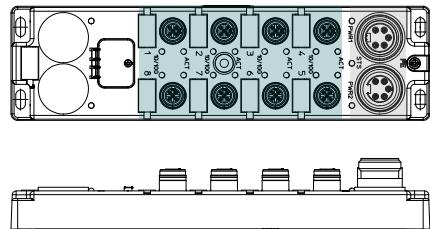
Storage Temperature: -40 to +90°C

Approvals: CE, UL, cUL



### Ordering Information

#### Brad® Harsh-Duty Unmanaged IP67 Ethernet Switch – 60mm M12



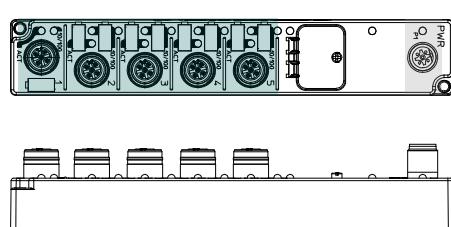
##### Connectivity

**Ethernet:**  
8x Female M12 4P  
D-Code  
Ultra-Lock® compatible

**Power:**  
1x Male 7/8" or  
1x Male M12  
4 or 5 Pole  
1x Fem. 7/8" or  
1x Fem. M12  
4 or 5 Pole  
Dual power supply entry, 9-36VDC

Power Type	Engineering No.	Standard Order No.
7/8" 5 Pole	DRL-780	112105-5002
7/8" 4 Pole	DRL-781	112105-5004
M12 5 Pole	DRL-782	112105-5006

#### Brad® Harsh-Duty Unmanaged IP67 Ethernet Switch – 30mm M12



##### Connectivity

**Ethernet:**  
5x Female M12 4P  
D-Code

**Power:**  
1x Male M12 5 Pole  
9-36VDC

Power Type	Engineering No.	Standard Order No.
M12 5 Pole	DRL-750	112111-5001

**Plug & Play infrastructure to interconnect Ethernet IP67 devices based on D-Code M12 standard connectors.**

**Brad® PROFINET Infrastructure Components**

## Ordering Information

### Brad® PROFINET Single-Ended M12 Cordsets



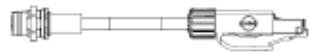
PROFINET WSOR Cable 12				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	E10A00612M020	130048-0313	E10A00712M020	130048-0312
5m	E10A00612M050	130048-0295	E10A00712M050	130048-0300
10m	E10A00612M100	130048-0296	E10A00712M100	130048-0301
20m	E10A00612M200	130048-0297	E10A00712M200	130048-0302
30m	E10A00612M300	130048-0298	—	—

### Brad® PROFINET Double-Ended M12 Cordsets



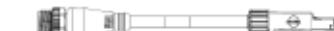
PROFINET WSOR Cable 12				
	Male to Male Straight		Male to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	E11A06012M010	120108-8304	E11A06312M010	120108-0508
2m	E11A06012M020	120108-8305	E11A06312M020	120108-0509
5m	E11A06012M050	120108-8308	E11A06312M050	120108-0510
10m	E11A06012M100	120108-8311	E11A06312M100	120108-0511
15m	E11A06012M150	120108-8313	—	—
20m	E11A06012M200	120108-8315	—	—
30m	E11A06012M300	120108-8317	—	—

### Brad® PROFINET M12 Receptacle



Female M12 Receptacle to RJ45

PNET RJ45 Adapters		
Length	Engineering No.	Standard Order No.
1m	ERWPAU7012M010	120108-0519
2m	ERWPAU7012M020	120108-0520



Male M12 Connector to RJ45

PNET RJ45 Adapters		
Length	Engineering No.	Standard Order No.
1m	E16A06012M010	120108-0521
2m	E16A06012M020	120108-0522
5m	E16A06012M050	120108-0523
10m	E16A06012M100	120108-0524



### PROFINET Cable 12 Specification\*

Datasheet Part No: CAB-12

AWG22 Shielded PROFINET Cat5e cable  
Conductors: 2x2x0,34mm<sup>2</sup>  
(White, Yellow, Blue, Orange)

Jacket material: Green Blend PUR,  
flame retardant, oil, UV & Weld Slag  
resistant, silicone & FCKW free

Diameter: 6,7 +0,2mm

Static Operating Temp:  
-40 to +80°C

Dynamic Operating Temp: -25 to  
+85°C

Drag Chain (>5 Mio Cycles)  
& torsion suitable

Approvals: UL, CSA

### PROFINET Cable 12 100m Bulk cable

Engineering No.	Standard Order No.
CAB-12-100	112180-0077

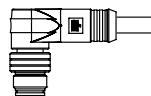
This cable can also be used for any other  
Ethernet communication protocol



\* Detailed cable specification attached to  
bulk cable drawings

## Ordering Information

### Brad® EtherNet/IP Single-Ended M12 Cordsets



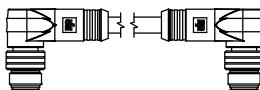
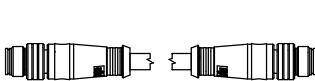
### Brad® EtherNet/IP Infrastructure Components

## EtherNet/IP™



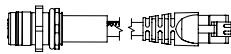
EtherNet/IP PVC Cable 15				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	E10A00615M020	130048-0055	E10A00715M020	130048-0079
5m	E10A00615M050	130048-0056	E10A00715M050	130048-0080
10m	E10A00615M100	130048-0057	E10A00715M100	130048-0081
20m	E10A00615M200	130048-8006	E10A00715M200	130048-0290
30m	E10A00615M300	130048-0059	—	—

### Brad® EtherNet/IP Double-Ended M12 Cordsets



EtherNet/IP PVC Cable 15				
	Male to Male Straight		Male to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	E11A06015M010	130048-0122	E11A06315M010	130048-0179
2m	E11A06015M020	130048-0124	E11A06315M020	130048-0181
5m	E11A06015M050	130048-0126	E11A06315M050	130048-0183
10m	E11A06015M100	130048-0128	E11A06315M100	130048-0185
15m	E11A06015M150	130048-0130	—	—
20m	E11A06015M200	130048-0010	—	—
30m	E11A06015M300	130048-0132	—	—

### Brad® EtherNet/IP M12 Receptacle



Female Receptacle to RJ45

Male M12 Connector to RJ45

Ethernet RJ45 Adapters		
Length	Engineering No.	Standard Order No.
1m	ERWPAB3002M010	130058-0025
2m	ERWPAB3002M020	130054-0021

Ethernet RJ45 Adapters		
Length	Engineering No.	Standard Order No.
1m	E16A06015M010	130048-0280
2m	E16A06015M020	130048-8099
5m	E16A06015M050	130048-0237
10m	E16A06015M100	130048-8101

### EtherNet/IP Cable Specification

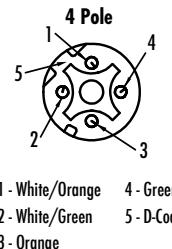
Shielded Ethernet Cat5e cable  
Conductors: 2 Pairs AWG26  
(White/Green, Green, White/Orange and Orange)

Jacket Material: Teal PVC

Operating Temperature:  
-20°C to +75°C

Sun and Oil resistant

Approvals: UL, cUL, EtherNet/IP

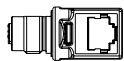


### Note:

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

## Ordering Information

### Brad® Ethernet Bulkhead Adapter (M12 Female to RJ45)



Straight		90°	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
ER1PADAPTER	130054-0009	ER1PADAPTER90	130054-0010

### Brad® Ethernet Field Attachable



M12 Male		M12 Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
E1AS06-52	130047-0018	E1AS00-52	130047-0017

### Brad® RJ45 Connector



Engineering No.	Standard Order No.
85720-1050	85720-1050

**Brad®**  
Ethernet  
Infrastructure  
Accessories

**EtherNet/IP™**

**PROFINET®**



**"All trademarks used herein are the property of their respective owners. Reference to any non-Molex trademarks is not intended to claim any endorsement or association between Molex and the respective trademark owners, and should not be construed."**

**IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications.**

## Specifications

PROFIBUS DP-V0 Slave according EN 50170  
 Auto baud: all baud rates up to 12M Baud  
 Address Settings: 1 – 99 by 2 rotary switches  
 Operating Temperature: -25 to +70°C  
 Storage Temperature: -25 to +90°C  
 Approvals: CE, UL, PNO Certification



**User manual and GSD files to download under:**

[www.molex.com](http://www.molex.com) (Select Automation & Industrial / Brad Automation / Support & Downloads)

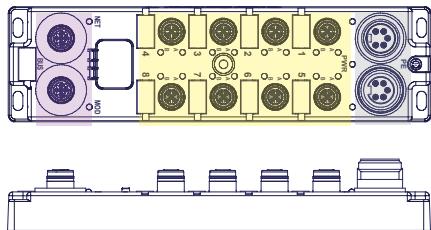
## Brad® PROFIBUS HarshIO Modules



Brad® HarshIO IP67 PROFIBUS Modules  
 60mm and 30mm

## Ordering Information

### Brad® HarshIO IP67 PROFIBUS Module – 60mm M12



#### Connectivity

PROFIBUS:	Inputs/Outputs:	Power:
1x Male M12 5P B-Code 1x Fem. M12 5P B-Code	8x Female M12 5P A-CodeDual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra- Lock® compatible	1x Male 7/8" 5 Poles 1x Female 7/8" 5 Poles Voltage: 24V Input & Output, max. 8 Amps

All Brad® IP67 HarshIO Modules with Micro-Change® (M12) ports accept both threaded cordsets and the new Brad® Ultra-Lock® Connection System, the fastest, easiest and most secure connection ever.



Ultra-Lock® technology is designed for higher performance and reliability to eliminate downtime, increase productivity and lower costs.

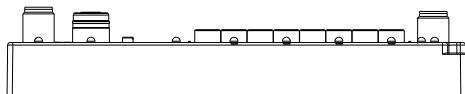
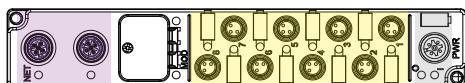
Power Type	Input/Output		Engineering No.	Standard Order No.
7/8" 5 Pole	NPN	16I	TCDPB-8D0N-B1U	112038-0030
		14I/2O	TCDPB-8C2N-B1U	112038-0028
		12I/4O	TCDPB-8B4N-B1U	112038-0026
		8I/8O	TCDPB-888N-B1U	112038-0024
	User Config.		TCDPB-8YYX-B1U	112038-5005
	PNP	16I	TCDPB-8D0P-B1U	112038-0031
		14I/2O	TCDPB-8C2P-B1U	112038-0029
		12I/4O	TCDPB-8B4P-B1U	112038-0027
		8I/8O	TCDPB-888P-B1U	112038-0025

The compact 30mm wide version is designed to be installed in narrow areas, and is perfect for packaging and pick-and-place applications. The lower port count of this model provides a cost-effective module.

## Brad® PROFIBUS HarshIO Modules

### Ordering Information

#### Brad® HarshIO IP67 PROFIBUS Module – 30mm M8



#### Connectivity

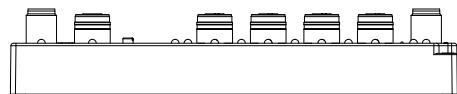
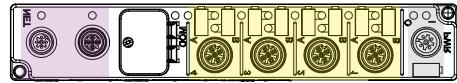
**PROFIBUS:**  
1x Male M12 5 Pole  
B-Code  
1x Fem. M12 5 Pole  
B-Code

**Inputs/Outputs:**  
8x Female M8  
3 Poles  
Single IO signal  
per port  
Inputs 24V max.  
140mA  
Outputs 24V max.  
1,4A

**Power:**  
1x Male M12 5 Pole  
A-Code  
Voltage: 24V Input  
& Output, max.  
4 Ampere

Power Type	Input/Output		Engineering No.	Standard Order No.
M12 5 Pole	NPN	8I	TBDPB-880N-B84	112038-0019
		6I/2O	TBDPB-862N-B84	112038-0017
		4I/4O	TBDPB-844N-B84	112038-0015
	PNP	8I	TBDPB-880P-B84	112038-0021
		6I/2O	TBDPB-862P-B84	112038-0018
		4I/4O	TBDPB-844P-B84	112038-0016
		8O	TBDPB-808P-B84	112038-0014

### Brad® HarshIO IP67 PROFIBUS Module – 30mm M12



#### Connectivity

**PROFIBUS:**  
1x Male M12 5 Pole  
B-Code  
1x Fem. M12 5 Pole  
B-Code

**Inputs/Outputs:**  
4x Female M12  
5P A-Code Dual IO  
signal per port  
Inputs 24V max.  
140mA Outputs  
24V max. 1,4A  
Ultra-Lock®  
compatible

**Power:**  
1x Male M12 5 Pole  
A-Code  
Voltage: 24V Input  
& Output, max.  
4 Ampere

Power Type	Input/Output		Engineering No.	Standard Order No.
M12 5 Pole	NPN	8I	TBDPB-480N-B8U	112038-0009
		6I/2O	TBDPB-462N-B8U	112038-0007
		4I/4O	TBDPB-444N-B8U	112038-0005
	PNP	8I	TBDPB-480P-B8U	112038-0011
		6I/2O	TBDPB-462P-B8U	112038-0008
		4I/4O	TBDPB-444P-B8U	112038-0006
		8O	TBDPB-408P-B8U	112038-0003

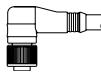
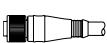
**Plug & Play PROFIBUS infrastructure to interconnect IP67 devices based on B-Code M12 standard connectors. Designed with PUR jacket material for better chemical and oil resistance, low-resistance contact design and 360° shielded head design to reduce RFI/EMI.**

## Ordering Information

### Brad® PROFIBUS Single-Ended M12 Cordsets

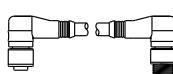


PROFIBUS Shielded PUR Cable				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	B05S06PP4M020	120098-0102	B05S07PP4M020	120098-0109
5m	B05S06PP4M050	120098-0104	B05S07PP4M050	120098-0111
10m	B05S06PP4M100	120098-0107	B05S07PP4M100	120098-0112
20m	B05S06PP4M200	120098-8053	B05S07PP4M200	120098-8054



PROFIBUS Shielded PUR Cable				
	Female Straight		Female 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	B05S00PP4M020	120098-0085	B05S01PP4M050	120098-0095
5m	B05S00PP4M050	120098-0087	B05S01PP4M100	120039-0136
10m	B05S00PP4M100	120098-0089	B05S01PP4M200	120098-8056
20m	B05S00PP4M200	120039-0122	B05S01PP4M300	120098-8057

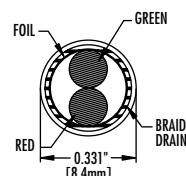
### Brad® PROFIBUS Double-Ended M12 Cordsets



PROFIBUS Shielded PUR Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	BB5S30PP4M010	120098-0006	BB5S33PP4M010	120098-0029
2m	BB5S30PP4M020	120098-0007	BB5S33PP4M020	120098-0031
5m	BB5S30PP4M050	120098-0010	BB5S33PP4M050	120098-0033
10m	BB5S30PP4M100	120098-0014	BB5S33PP4M100	120098-0035
15m	BB5S30PP4M150	120098-0160	BB5S33PP4M150	120098-8050
20m	BB5S30PP4M200	120098-0017	BB5S33PP4M200	120098-8051
30m	BB5S30PP4M300	120098-0019	BB5S33PP4M300	120098-8052

## Brad® PROFIBUS Infrastructure Components

### PROFIBUS Cable Specification



PROFIBUS Twisted Pair AWG22 (0,34mm<sup>2</sup>) cable

Conductors: 2x Red and Green

Jacket Material: Purple PUR

Voltage Rating: 300V

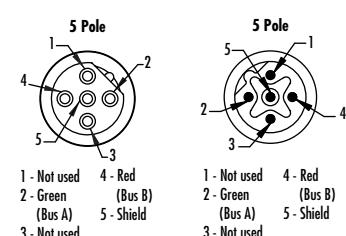
Operating Temperature: -40 to +60°C

C-Track compatible (3M cycles)

Bend radius: 10x cable diameter

Approvals: UL, CSA

### PROFIBUS M12 B-Code Connector Pinout (front view)



## Ordering Information

### Brad® PROFIBUS M12 Receptacles



PROFIBUS Shielded PUR Cable				
	Male		Female	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	BR5U76PP4M0203	120099-0015	BR5U70PP4M0203	120099-0007
4m	BR5U76PP4M0403	120099-0016	BR5U70PP4M0403	120099-0009

## Brad® PROFIBUS Infrastructure Components



### Brad® PROFIBUS M12 Field Attachables



Male		Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
BA5S06-32	120100-0002	BA5S00-32	120100-0001

### Brad® PROFIBUS IP20 Bus Terminators



	With Diagnostic		Without Diagnostic	
Desc.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Straight	MA9D00-42	120103-5001	—	—
90°	PA9D01-42	120103-0001	PA9S01-42	120103-0005
45°	PA9D0B-42	120103-0003	—	—

### Brad® PROFIBUS Accessories

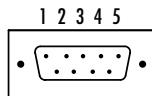
PROFIBUS M12 Male Terminator	
Engineering No.	Standard Order No.
B05S06*	120102-0002*



PROFIBUS M12 Bus Tee	
Engineering No.	Standard Order No.
PDT501*	120101-0002*

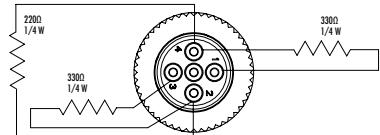


### PROFIBUS Terminator Resistor Wiring

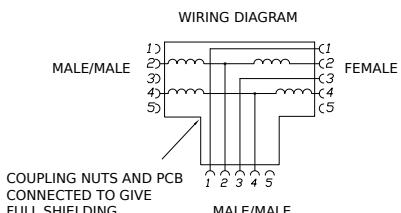


1 - Not used	6 - Not used
2 - Not used	7 - Not used
3 - Red (Bus B)	8 - Green (Bus A)
4 - Not used	9 - Not used
5 - Not used	

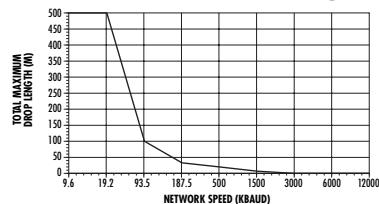
### PROFIBUS Terminator Resistor Wiring



### PROFIBUS Tee Wiring



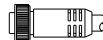
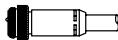
### PROFIBUS Max drop lengths



Plug & Play 5 Pole power distribution infrastructure to interconnect IP67 devices based on the 7/8" standard connectors also called Mini-Change®.

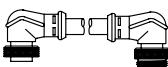
## Ordering Information

### Brad® Mini-Change® Single-Ended 5 Pole Cordsets



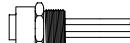
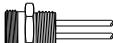
5 Pole Mini-Change® Auxiliary Power PUR Cable				
	Male Straight		Female Straight	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	105006B21M020	130006-8194	105000B21M020	130006-8151
5m	105006B21M050	130006-8139	105000B21M050	130006-8131
10m	105006B21M100	130006-8140	105000B21M100	130006-8132
20m	105006B21M200	130006-8141	105000B21M200	130006-8133
30m	105006B21M300	130006-8142	105000B21M300	130006-8134

### Brad® Mini-Change® Double-Ended 5 Pole Cordsets



5 Pole Mini-Change® Auxiliary Power PUR Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	115030B21M010	130010-8029	115033B21M010	130010-8036
2m	115030B21M020	130010-8030	115033B21M020	130010-8037
3m	115030B21M030	130010-8031	115033B21M030	130010-8038
5m	115030B21M050	130010-8032	115033B21M050	130010-8039
10m	115030B21M100	130010-8033	115033B21M100	130010-8040
15m	115030B21M150	130010-8034	115033B21M150	130010-8041
20m	115030B21M200	130010-8035	115033B21M200	130010-8042

### Brad® Mini-Change® 5 Pole Receptacles



5 Pole Mini-Change® Auxiliary Power PUR Cable				
	Male Receptacle		Female Receptacle	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	1R5006A80M010	130013-8078	1R5000A80M010	130013-8076
2m	1R5006A80M020	130013-8079	1R5000A80M020	130013-8077

Description	Engineering No.	Standard Order No.
Gasket for Receptacle, 1/2"	00-5087	130180-0059
Locknut for Receptacle, 1/2" 14NPT	30-1100	130184-0031

## Brad® Mini-Change® 7/8" Auxiliary Power Infrastructure Components



### Mini-Change® 5 Pole Power Cable Specification

5 Pole 16 AWG cable for 24V power distribution

Conductors: 5 x 16 AWG (1.5mm<sup>2</sup>)  
Black, Blue, Green/Yellow, Brown, White

Jacket Material: Grey PUR, halogen free, flame retardant, oil resistant

Voltage Rating: 300V

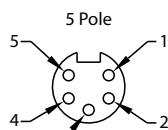
Operating Temperature: -40°C to +80°C

C-Track and Torsion Flex Rated (>2Mio Cycles)

Bend radius: 10x cable diameter

Approvals: UL

### Mini-Change® 5 Pole Female Connector Pinout (Front view)



1. Black – Output Power V-
2. Blue – Bus Power V-
3. Green/Yellow – Ground
4. Brown – Bus Power V+
5. White – Output Power V+

## Ordering Information

### Brad® Mini-Change® 5 Pole Field Attachable Connector



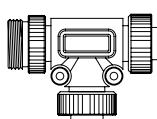
Male		Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1A5006-34	130017-0029	1A5000-34	130017-0023

## Brad® Mini-Change® 7/8" Auxiliary Power Infrastructure Components

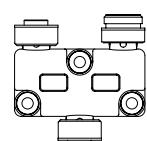


### Brad® Mini-Change® 5 Pole Tees

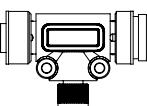
Mini-Change® Tee	
Engineering No.	Standard Order No.
DN3020	130035-0057



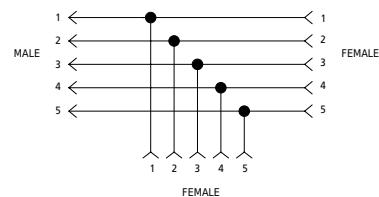
Mini-Change® Y-Splitter	
Engineering No.	Standard Order No.
DN3200	130035-0071



Mini-Change® Tee w/M12 Drop	
Engineering No.	Standard Order No.
DND3020	130039-0341

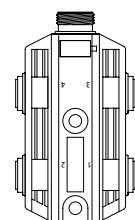


### 5 Pole Mini-Change® Tee, Y-Splitter and Distribution Box Wiring



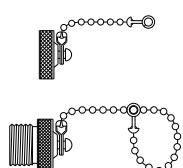
### Brad® Mini-Change® Accessories

Mini-Change® Caps		
Description	Engineering No.	Standard Order No.
Int. Thread	65-0086	130201-1111
Ext. Thread	65-0085	130201-1109



#### Note:

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the Standard Order part number listed.



**Plug & Play 5 Pole power distribution infrastructure to interconnect IP67 devices based on the A-Code M12 standard connectors.**

## Ordering Information

### Brad® Micro-Change® M12 Single-Ended 5 Pole Cordsets

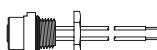


B42 WSOR Cable				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	805006B42M020	120065-2280	805007B42M020	120065-2292
5m	805006B42M050	120065-2281	805007B42M050	120065-2293
10m	805006B42M100	120065-2282	805007B42M100	120065-2294
20m	805006B42M200	120065-9546	805007B42M200	120065-9545
30m	805006B42M300	120065-9547	—	—



B42 WSOR Cable				
	Female Straight		Female 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	805000B42M020	120065-2256	805001B42M020	120065-2268
5m	805000B42M050	120065-2257	805001B42M050	120065-2269
10m	805000B42M100	120065-2258	805001B42M100	120065-2270
20m	805000B42M200	120065-9543	805001B42M200	120065-9542
30m	805000B42M300	120065-9544	—	—

### Brad® Micro-Change® M12 Auxiliary Power 5 Pole Receptacles



PVC Wires				
	Male		Female	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	8R5E36E03M020	120070-8173	8R5E30E03M020	120070-8171
3m	8R5E36E03M030	120070-8174	8R5E30E03M030	120070-8172

## Brad® Micro-Change® M12 Auxiliary Power Infrastructure Components



### B42 PUR WSOR cable Specification\*

Conductors: 5x0,34 mm<sup>2</sup>

(Brown, White, Blue, Black, Green/Yellow)

Jacket material: Black Blend PUR, flame retardant, oil, UV & Weld Slag resistant, silicone & FCKW free

Diameter 5 Pole: 5,5 +0,2mm

Voltage Rating: 600V, max 4 Amps

Static Operating Temp: -40 to +90°C

Dynamic Operating Temp: -25 to +80°C

Drag Chain (>5 Mio Cycles) & torsion suitable

Approvals: UL, CSA

### B42 PUR WSOR 200m

Engineering No.	Standard Order No.
B42-5-200	112180-0064

\* Detailed cable specification attached to bulk cable drawings

## Brad® Micro-Change® M12 Auxiliary Power Infrastructure Components

### Ordering Information

#### Brad® Micro-Change® M12 Auxiliary Power Double-Ended 5 Pole Cordsets



B42 WSOR Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	885030B42M010	120066-8824	885033B42M010	120066-8955
2m	885030B42M020	120066-8825	885033B42M020	120066-8956
3m	885030B42M030	120066-8826	885033B42M030	120066-8957
5m	885030B42M050	120066-8827	885033B42M050	120066-8958
10m	885030B42M100	120066-8828	885033B42M100	120066-8959
15m	885030B42M150	120065-9548	—	—
20m	885030B42M200	120065-9549	—	—

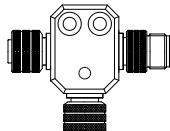
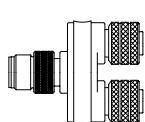


#### Brad® Micro-Change® M12 5 Pole Field Attachable



	Male		Female	
Max. Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3.3-6.6	8A5006-31	120071-0045	8A5000-31	120071-0041
4.1-8.1	8A5006-32	120071-0047	8A5000-32	120071-0043

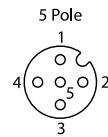
#### Brad® Micro-Change® M12 5 Pole Accessories



5 Poles M12 Y-Splitter	
Engineering No.	Standard Order No.
0812-05EFJ-0000A	120068-5107

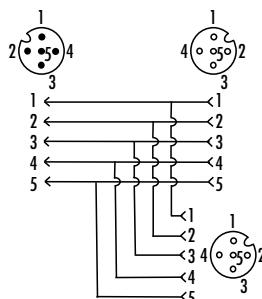
5 Poles M12 Tee	
Engineering No.	Standard Order No.
0812-051FJ-00000	120068-8009

**Micro-Change® A-Code M12 5 Pole Auxiliary Power Connector on the IO modules. Female Pinout**  
(Front view):



1. Brown – Module Power V+
2. White – Output Power V+
3. Blue – Ground
4. Black – Ground
5. Green/Yellow – Protective Earth

#### Micro-Change® M12 5 Pole Tee and Y-Splitter Wiring



IP67 rated passive IO module for harsh environments are designed to concentrate the sensor/actuator signals into one unique home run cable for a better mechanical infrastructure wiring on the machine.

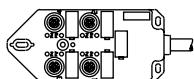
**Brad®  
Sensor/Actuator  
Distribution Boxes**

## Specifications

IP67 Molded PBT Housing, color Black  
Single or Dual Input/Output signal per port  
Indicating LED for Power and sensor trigger  
PNP Version (available also in NPN version)  
Electrical: 10-30V DC max. & 12.0A max. (4.0A max. per port)  
Approvals: UL, CSA, IP67, NEMA 6

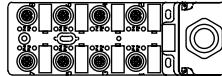
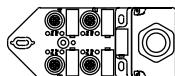
## Ordering Information

### Brad® M12 Distribution Boxes with PUR Home Run Cable



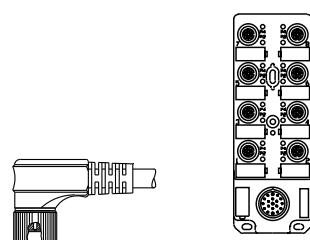
		4 Ports		8 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	5m	BTB400P-FBW-05	120248-0004	BTB800P-FBW-05	120248-0022
	10m	BTB400P-FBW-10	120248-0005	BTB800P-FBW-10	120248-0023
Dual IO	5m	BTB405P-FBW-05	120248-0031	BTB805P-FBW-05	120248-0049
	10m	BTB405P-FBW-10	120248-0032	BTB805P-FBW-10	120248-0050

### Brad® M12 Distribution Boxes with Field Attachable Terminals



		4 Ports		8 Ports	
IO Type	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	
Dual IO	BTB403P-FBA	120248-0085	BTB803P-FBA	120248-0087	

### Brad® M12 Distribution Boxes with M23 Connector and Home Run Cable



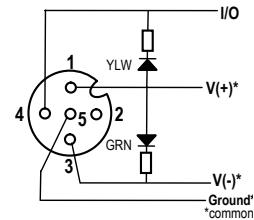
8 Ports		
IO Type	Engineering No.	Standard Order No.
Single IO	BTB801P-FBC	120248-0060
Dual IO	BTB803P-FBC	120248-0066

	Single IO Home Run Cable (12p/11 wires)		Dual IO Home Run Cable (19p/19 wires)	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
10m	K02101B80M100*	120094-8150	K03001B80M100*	120094-8163

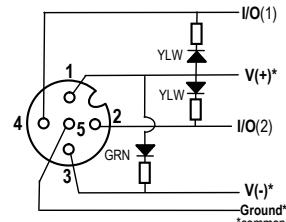
\*Home run cable also available in 1m, 5m, 15m, 20m, 30m and also with m23 straight connector.



#### Micro-Change® M12 Single IO Connector Wiring



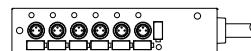
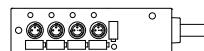
#### Micro-Change® M12 Dual IO Connector Wiring



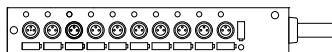
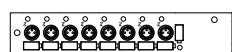
## Brad® Sensor/Actuator Distribution Boxes

### Ordering Information

#### Brad® M8 Distribution Boxes with Side Mount PUR Home Run Cable

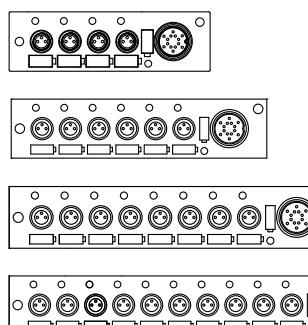


		4 Ports		6 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	5m	BEB401P-FBW-05	120247-0001	BEB601P-FBW-05	120247-0040
	10m	BEB401P-FBW-10	120247-0002	BEB601P-FBW-10	120247-0041

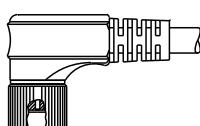


		8 Ports		10 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	5m	BEB801P-FBW-05	120247-0012	BEBA01P-FBW-05	120247-0006
	10m	BEB801P-FBW-10	120247-0013	BEBA01P-FBW-10	120247-0007

#### Brad® M8 Distribution Boxes with M16 Connector and Home Run Cable



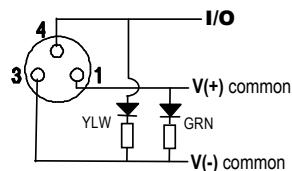
	Single IO Distribution Box with M16 connector	
Ports	Engineering No.	Standard Order No.
4	BNB401P-FBC	120247-0059
6	BNB601P-FBC	120247-0061
8	BNB801P-FBC	120247-0063
10	BNBA01P-FBC	120247-0065



	M16 Single IO Home Run Cable 10 Meter	
Block	Engineering No.	Standard Order No.
4 Ports	L04301B78M100*	130023-8011
6 Ports	L04201B78M100*	130023-8017
8 Ports	L04101B78M100*	130023-8023
10 Ports	L04A01B78M100*	130023-8029

\*Home run cable also available in 5m and 15m length.

#### Nano-Change® M8 Single IO Connector Wiring



#### Note:

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

**Brad® Micro-Change® M12 connectivity is a ready-to-use solution based on the A-Code M12 standard with IP67/68 rating to wire a wide range of sensors and actuators from proximity switches to rotary encoders in harsh environments.**

## Brad® Micro-Change® M12 Sensor/Actuator Connectivity



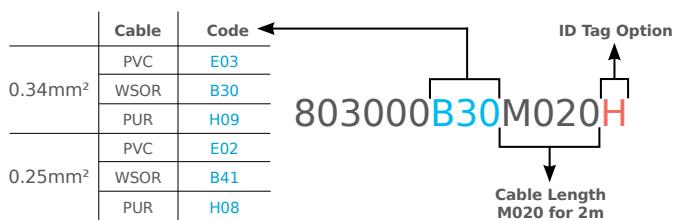
### Ordering Information

#### Brad® Micro-Change® M12 Single-Ended Cordsets



B30 WSOR Cable										
		Female Straight		Female 90°		Male Straight		Male 90°		
Poles	Length	Engineering No.	Standard Order No.							
3	1m	803000B30M010	120065-2247	803001B30M010	120065-2259	803006B30M010	120065-2271	803007B30M010	120065-2283	
	2m	803000B30M020	120065-2248	803001B30M020	120065-2260	803006B30M020	120065-2272	803007B30M020	120065-2284	
	5m	803000B30M050	120065-2249	803001B30M050	120065-2261	803006B30M050	120065-2273	803007B30M050	120065-2285	
	10m	803000B30M100	120065-2250	803001B30M100	120065-2262	803006B30M100	120065-2274	803007B30M100	120065-2286	
4	1m	804000B30M010	120065-2251	804001B30M010	120065-2263	804006B30M010	120065-2275	804007B30M010	120065-2287	
	2m	804000B30M020	120065-2252	804001B30M020	120065-2264	804006B30M020	120065-2276	804007B30M020	120065-2288	
	5m	804000B30M050	120065-2253	804001B30M050	120065-2265	804006B30M050	120065-2277	804007B30M050	120065-2289	
	10m	804000B30M100	120065-2254	804001B30M100	120065-2266	804006B30M100	120065-2278	804007B30M100	120065-2290	
5	1m	805000B30M010	120065-9518	805001B30M010	120065-9522	805006B30M010	120065-9526	805007B30M010	120065-9530	
	2m	805000B30M020	120065-9519	805001B30M020	120065-9523	805006B30M020	120065-9527	805007B30M020	120065-9531	
	5m	805000B30M050	120065-9520	805001B30M050	120065-9524	805006B30M050	120065-9528	805007B30M050	120065-9532	
	10m	805000B30M100	120065-9521	805001B30M100	120065-9525	805006B30M100	120065-9529	805007B30M100	120065-9533	
8	1m	808000B41M010	120065-2306	808001B41M010	120065-2310	808006B41M010	120065-2302	808007B41M010	120065-2314	
	2m	808000B41M020	120065-9458	808001B41M020	120065-2311	808006B41M020	120065-9453	808007B41M020	120065-2315	
	5m	808000B41M050	120065-2308	808001B41M050	120065-2312	808006B41M050	120065-2304	808007B41M050	120065-2316	
	10m	808000B41M100	120065-9463	808001B41M100	120065-2313	808006B41M100	120065-2305	808007B41M100	120065-2317	

### Build-A-Part Number Configuration Code



## Ordering Information

### Brad® Micro-Change® M12 Double-Ended Cordsets



B30 WSOR Cable					
		Fem. To Male Straight		Fem. 90° To Male Straight	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	0.6m	883030B30M006	120066-8889	883031B30M006	120066-8877
	1m	883030B30M010	120066-8890	883031B30M010	120066-8878
	2m	883030B30M020	120066-8891	883031B30M020	120066-8879
	3m	883030B30M030	120066-8892	883031B30M030	120066-8880
	5m	883030B30M050	120066-8893	883031B30M050	120066-8881
	10m	883030B30M100	120066-8894	883031B30M100	120066-8882
4	0.6m	884030B30M006	120066-8817	884031B30M006	120066-8829
	1m	884030B30M010	120066-8818	884031B30M010	120066-8830
	2m	884030B30M020	120066-8819	884031B30M020	120066-8831
	3m	884030B30M030	120066-8820	884031B30M030	120066-8832
	5m	884030B30M050	120066-8821	884031B30M050	120066-8833
	10m	884030B30M100	120066-8822	884031B30M100	120066-8834
5	0.6m	885030B30M006	120066-8991	885031B30M006	120066-8997
	1m	885030B30M010	120066-8992	885031B30M010	120066-8998
	2m	885030B30M020	120066-8993	885031B30M020	120066-8999
	3m	885030B30M030	120066-8994	885031B30M030	120066-9000
	5m	885030B30M050	120066-8995	885031B30M050	120066-9001
	10m	885030B30M100	120066-8996	885031B30M100	120066-9002
8	0.6m	888030B41M006	120066-8895	888031B41M006	120066-8883
	1m	888030B41M010	120066-8896	888031B41M010	120066-8884
	2m	888030B41M020	120066-8897	888031B41M020	120066-8885
	3m	888030B41M030	120066-8898	888031B41M030	120066-8886
	5m	888030B41M050	120066-8899	888031B41M050	120066-8887
	10m	888030B41M100	120066-8900	888031B41M100	120066-8888

### Brad® Micro-Change® M12 Front Mount Receptacles



#### Wires with PVC Jacket

		Male		Female	
Poles	Mount Thread	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	PG9	8R4J36E03C3003	120070-0156	8R4J30E03C3003	120070-0395
	M14x1	8R4E36E03C3003	120011-0017	8R4E30E03C3003	120011-0013
5	PG9	8R5J36E03C3003	120070-0231	8R5J30E03C3003	120070-0229
	M14x1	8R5E36E03C3003	120011-0035	8R5E30E03C3003	120011-0033

## Brad® Micro-Change® M12 Sensor/Actuator Connectivity



#### B30 PUR WSOR Cable Specification\*

Conductors: 3x0,34 mm<sup>2</sup>, 4x0,34 mm<sup>2</sup> or 5x0,34 mm<sup>2</sup> \*\*

(Brown, White, Blue, Black, Grey)

Jacket material: Black Blend PUR, flame retardant, oil, UV & Weld Slag resistant, silicone & FCKW free

Diameter 3 Pole: 4,8 +-0,2mm

Diameter 4 Pole: 5,1 +-0,2mm

Diameter 5 Pole: 5,5 +-0,2mm

Voltage Rating: 600V, max 4 Amps

Static Operating Temp: -40 to +90°C

Dynamic Operating Temp: -25 to +80°C

Drag Chain (>5 Mio Cycles) & torsion suitable

Approvals: UL, CSA

#### B30 PUR WSOR 200m Bulk Cable

Engineering No.	Standard Order No.
B30-3-200	112180-0003
B30-4-200	112180-0004
B30-5-200	112180-0005

\* Detailed cable specification attached to bulk cable drawings

\*\* 8 pole cable specification: see B41 description in M8 section

## Ordering Information

### Brad® Micro-Change M12

#### Single-Ended Cordsets with LED Wiring



B30 WSOR Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	1m	8030P0B30M010	120067-8454	8030P1B30M010	120067-8450
	2m	8030P0B30M020	120067-8455	8030P1B30M020	120067-8451
	3m	8030P0B30M030	120067-8456	8030P1B30M030	120067-8452
	5m	8030P0B30M050	120067-8431	8030P1B30M050	120067-8432
	10m	8030P0B30M100	120067-8457	8030P1B30M100	120067-8453
4	1m	8040P0B30M010	120067-8463	8040P1B30M010	120067-8458
	2m	8040P0B30M020	120067-8464	8040P1B30M020	120067-8459
	3m	8040P0B30M030	120067-8465	8040P1B30M030	120067-8460
	5m	8040P0B30M050	120067-8430	8040P1B30M050	120067-8461
	10m	8040P0B30M100	120067-8466	8040P1B30M100	120067-8462

### Brad® Micro-Change M12

#### Double-Ended Cordsets with LED Wiring

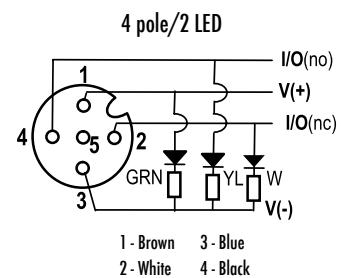
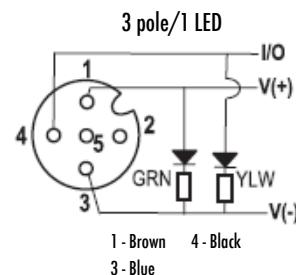


B30 WSOR Cable					
		Female to Male Straight		Female 90° to Male Straight	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	1m	8830P6B30M010	120067-8472	8830P7B30M010	120067-8467
	2m	8830P6B30M020	120067-8473	8830P7B30M020	120067-8468
	3m	8830P6B30M030	120067-8474	8830P7B30M030	120067-8469
	5m	8830P6B30M050	120067-8475	8830P7B30M050	120067-8470
	10m	8830P6B30M100	120067-8476	8830P7B30M100	120067-8471
4	1m	8840P6B30M010	120067-8423	8840P7B30M010	120067-8420
	2m	8840P6B30M020	120067-8424	8840P7B30M020	120067-8421
	3m	8840P6B30M030	120067-8478	8840P7B30M030	120067-8477
	5m	8840P6B30M050	120067-8425	8840P7B30M050	120067-8422
	10m	8840P6B30M100	120067-8426	8840P7B30M100	120067-8427

## Brad® Micro-Change M12 with LED



### Micro-Change M12 with LED Wiring



## Brad® M12 Shielded Cable

### Ordering Information

#### Brad® M12 Single-Ended Shielded Cable



BS1 WSOR Shielded Cable					
		Female Straight		Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	1m	804S00BS1M010	120069-8595	804S01BS1M010	120069-8606
	2m	804S00BS1M020	120069-8596	804S01BS1M020	120069-8485
	3m	804S00BS1M030	120069-8725	804S01BS1M030	120069-8724
	5m	804S00BS1M050	120069-8487	804S01BS1M050	120069-8486
	10m	804S00BS1M100	120069-8556	804S01BS1M100	120069-8559
5	1m	805S00BS1M010	120069-8597	805S01BS1M010	120069-8607
	2m	805S00BS1M020	120069-8598	805S01BS1M020	120069-8608
	3m	805S00BS1M030	120069-8727	805S01BS1M030	120069-8726
	5m	805S00BS1M050	120069-8538	805S01BS1M050	120069-8542
	10m	805S00BS1M100	120069-8539	805S01BS1M100	120069-8543

#### Brad® M12 Double-Ended Shielded Cable



BS1 WSOR Shielded Cable					
		Female to Male Straight		Female 90° to Male Straight	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	1m	884S30BS1M010	120069-8649	884S31BS1M010	120069-8689
	2m	884S30BS1M020	120069-8650	884S31BS1M020	120069-8690
	3m	884S30BS1M030	120069-8651	884S31BS1M030	120069-8691
	5m	884S30BS1M050	120069-8652	884S31BS1M050	120069-8692
	10m	884S30BS1M100	120069-8653	884S31BS1M100	120069-8693
5	1m	885S30BS1M010	120069-8654	885S31BS1M010	120069-8694
	2m	885S30BS1M020	120069-8655	885S31BS1M020	120069-8695
	3m	885S30BS1M030	120069-8656	885S31BS1M030	120069-8696
	5m	885S30BS1M050	120069-8657	885S31BS1M050	120069-8697
	10m	885S30BS1M100	120069-8658	885S31BS1M100	120069-8698



#### BS1 Shielded WSOR Cable Specification\*

Conductors: 4x0,34 mm<sup>2</sup> or 5x0,34 mm<sup>2</sup>

(Brown, White, Blue, Black, Grey)

Jacket material: Black Blend PUR, flame retardant, oil, UV & Weld Slag resistant, silicone & FCKW free

Braid coverage > 80%

Diameter 4 Pole: 5,7 +-0,2mm

Diameter 5 Pole: 6,1 +-0,2mm

Voltage Rating: 600V, max 4 Amps

Static Operating Temp: -40 to +90°C

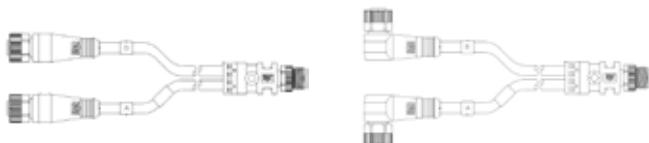
Dynamic Operating Temp: -25 to +80°C

Drag Chain (>5 Mio Cycles) & torsion suitable

Approvals: UL, CSA

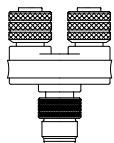
## Ordering Information

### Brad® M12 Cable Splitters

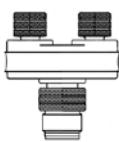


B30 WSOR Cable					
		2x Female to Male Straight		2x Female 90° to Male Straight	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	.6m	884A30B30M006	120068-8193	884A31B30M006	120068-8189
	1m	884A30B30M010	120068-8194	884A31B30M010	120068-8190
	2m	884A30B30M020	120068-8195	884A31B30M020	120068-8191
	5m	884A30B30M050	120068-8196	884A31B30M050	120068-8192

### Brad® Micro-Change® M12 Y-Splitters & Adapters



Y-Splitter M12 to M12		
	1x M12 Male to 2x M12 Female	
Poles	Engineering No.	Standard Order No.
4	081204EMF00000	120068-0294
5	081205EMF00000	120068-0139



Y-Splitter M12 to M8		
	1x M12 Male to 2x M8 Female	
Poles	Engineering No.	Standard Order No.
4	080804EMF00000	120089-0031

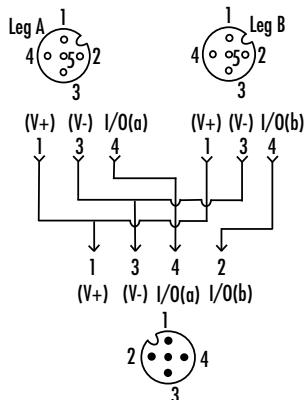


Adapter Connector		
	1xM12 Male to 1xM8 Female	
Poles	Engineering No.	Standard Order No.
3	483030	120033-0002
4	484030	120033-0001

## Brad® Micro-Change® M12 Sensor/Actuator Connectivity

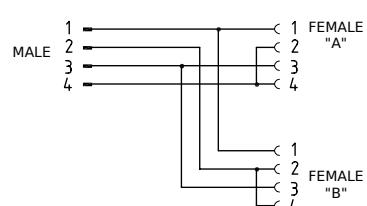


### M12 Cable Splitter Wiring

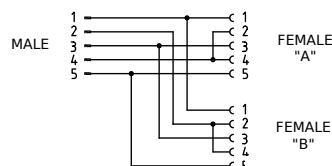


### Y-Splitter Wiring Schematic

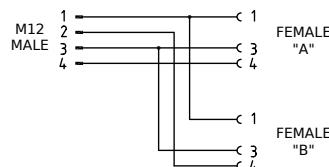
#### M12 to M12 4 Pole



#### M12 to M12 5 Pole

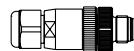


#### M12 to M8 4 Pole

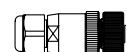


## Ordering Information

### Brad® Micro-Change® M12 Field Attachable Connectors



		Male Straight		Male 90°	
Poles	Max. Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	3.3-6.6	8A4006-31	120071-0038	8A4007-31	120071-0040
	4.1-8.1	8A4006-32	120071-0039	8A4007-32	120071-5011
5	3.3-6.6	8A5006-31	120071-0045	8A5007-31	120071-0049
	4.1-8.1	8A5006-32	120071-0047	8A5007-32	120071-0071



		Female Straight		Female 90°	
Poles	Max. Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	3.3-6.6	8A4000-31	120071-0035	8A4001-31	120071-0037
	4.1-8.1	8A4000-32	120071-0036	8A4001-32	120071-5010
5	3.3-6.6	8A5000-31	120071-0041	8A5001-31	120071-0044
	4.1-8.1	8A5000-32	120071-0043	8A5001-32	120071-0070

### Brad® Micro-Change® M12 Closure Caps



Plastic Closure Cap

To Cover Male		To Cover Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
—	120308-0680	—	120358-0030



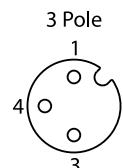
Rubber Closure Cap with Leash

To Cover Male		To Cover Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
—	120076-5046	—	120076-5047

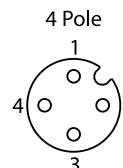
## Brad® Micro-Change® M12 Sensor/Actuator Connectivity



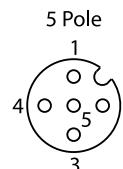
### Micro-Change® M12 Connector Pinout



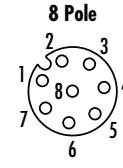
1 - Brown      4 - Black  
3 - Blue



1 - Brown      3 - Blue  
2 - White      4 - Black



1 - Brown      4 - Black  
2 - White      5 - Grey  
3 - Blue



1 - White      5 - Grey  
2 - Brown      6 - Pink  
3 - Green      7 - Blue  
4 - Yellow      8 - Red

**Brad® Nano-Change® M8 connectivity provides a rugged and space-saving solution to wire a wide range of sensors and actuators from proximity switches to rotary encoders in harsh environments.**

## Brad® Nano-Change® M8 Sensor/Actuator Connectivity



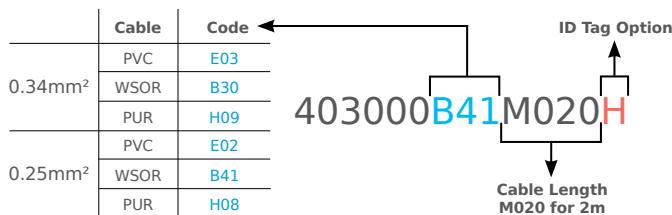
### Ordering Information

#### Brad® Nano-Change® M8 Single-Ended Cordsets



B41 WSOR Cable									
		Female Straight		Female 90°		Male Straight		Male 90°	
Poles	Length	Engineering No.	Standard Order No.						
3	1m	403000B41M010	120086-8655	403001B41M010	120086-8667	403006B41M010	120086-8631	403007B41M010	120086-8643
	2m	403000B41M020	120086-8656	403001B41M020	120086-8668	403006B41M020	120086-8632	403007B41M020	120086-8644
	5m	403000B41M050	120086-8657	403001B41M050	120086-8669	403006B41M050	120086-8633	403007B41M050	120086-8645
	10m	403000B41M100	120086-8658	403001B41M100	120086-8670	403006B41M100	120086-8634	403007B41M100	120086-8646
4	1m	404000B41M010	120086-8659	404001B41M010	120086-8671	404006B41M010	120086-8635	404007B41M010	120086-8647
	2m	404000B41M020	120086-8660	404001B41M020	120086-8672	404006B41M020	120086-8636	404007B41M020	120086-8648
	5m	404000B41M050	120086-8661	404001B41M050	120086-8673	404006B41M050	120086-8637	404007B41M050	120086-8649
	10m	404000B41M100	120086-8662	404001B41M100	120086-8674	404006B41M100	120086-8638	404007B41M100	120086-8650
5	1m	405000B41M010	120086-8663	405001B41M010	120086-8675	405006B41M010	120086-8639	405007B41M010	120086-8651
	2m	405000B41M020	120086-8664	405001B41M020	120086-8676	405006B41M020	120086-8640	405007B41M020	120086-8652
	5m	405000B41M050	120086-8665	405001B41M050	120086-8677	405006B41M050	120086-8641	405007B41M050	120086-8653
	10m	405000B41M100	120086-8666	405001B41M100	120086-8678	405006B41M100	120086-8642	405007B41M100	120086-8654

### Build-A-Part Number Configuration Code



## Ordering Information

### Brad® Nano-Change® M8 Double-Ended Cordsets



## Brad® Nano-Change® M8 Sensor/Actuator Connectivity



B41 WSOR Cable					
		Female to Male Straight		Fem. 90° to Male Straight	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	.6m	443030B41M006	120087-8703	443031B41M006	120087-8721
	1m	443030B41M010	120087-8704	443031B41M010	120087-8722
	2m	443030B41M020	120087-8705	443031B41M020	120087-8723
	3m	443030B41M030	120087-8706	443031B41M030	120087-8724
	5m	443030B41M050	120087-8707	443031B41M050	120087-8725
4	.6m	444030B41M006	120087-8709	444031B41M006	120087-8727
	1m	444030B41M010	120087-8710	444031B41M010	120087-8728
	2m	444030B41M020	120087-8711	444031B41M020	120087-8729
	3m	444030B41M030	120087-8712	444031B41M030	120087-8730
	5m	444030B41M050	120087-8713	444031B41M050	120087-8731
5	.6m	445030B41M006	120087-8715	445031B41M006	120087-8733
	1m	445030B41M010	120087-8716	445031B41M010	120087-8734
	2m	445030B41M020	120087-8717	445031B41M020	120087-8735
	3m	445030B41M030	120087-8718	445031B41M030	120087-8736
	5m	445030B41M050	120087-8719	445031B41M050	120087-8737

### Brad® Nano-Change® M8 Receptacles



		Male		Female	
Poles	Mount Thread	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	M8x0.5 Front	4R3F06E02C3003	120031-0004	4R3F30E02C3003	120031-0015
	M8x1 Back	4R3F46E02C200	120090-5073	4R3L40E02C200	120090-5104
4	M8x0.5 Front	4R4F06E02C3003	120031-0006	4R4F30E02C3003	120031-0049
	M8x1 Back	4R4F46E02C200	120090-5078	4R4L40E02C200	120090-8037
5	M8x0.5 Front	4R5F06E02C3003	120031-0027	4R5F46E02C200	120031-0028
	M8x1 Back	4R5F30E02C3003	120031-0028	4R5L40E02C200	120090-8056

### B41 WSOR Cable Specification\*

Conductors: 3x0,25 mm<sup>2</sup>, 4x0,25 mm<sup>2</sup> 5x0,25 mm<sup>2</sup>, 8x0,25 mm<sup>2</sup>  
(Brown, White, Blue, Black, Grey)  
(BN, WH, BE, RD, GY, GN, YE, PK)

Jacket material: Black Blend PUR, flame retardant, oil, UV & Weld Slag resistant, silicone & FCKW free

Diameter 3 Pole: 4,5 +-0,2mm

Diameter 4 Pole: 4,8 +-0,2mm

Diameter 5 Pole: 5,3 +-0,2mm

Diameter 8 Pole: 6,4 +-0,2mm

Voltage Rating: 600V, max 4 Amps

Static Operating Temp: -40 to +90°C

Dynamic Operating Temp: -25 to +80°C

Drag Chain (>5 Mio Cycles) & torsion suitable

Approvals: UL, CSA

### B41 WSOR Bulk cable

Engineering No.	Standard Order No.
B41-3-200	112180-0067
B41-4-200	112180-0068
B41-5-200	112180-0069
B41-8-100	112180-0006

\* Detailed cable specification attached to bulk cable drawings

## Ordering Information

### Brad® Nano-Change® M8 Single-Ended Cordsets w/LED



		Female 90°	
Poles	Length	Engineering No.	Standard Order No.
3	1m	4030P1B41M010	120086-8687
	2m	4030P1B41M020	120086-8688
	5m	4030P1B41M050	120086-8689
	10m	4030P1B41M100	120086-8690

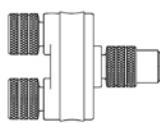
### Brad® Nano-Change® M8 Double-Ended Cordsets w/LED



		Female 90° to Male Straight	
Poles	Length	Engineering No.	Standard Order No.
3	1m	4430P7B41M006	120087-8779
	2m	4430P7B41M010	120087-8780
	5m	4430P7B41M020	120087-8781
	10m	4430P7B41M050	120087-8782

### Brad® Nano-Change® M8 Y-Splitters & Adapters

Y-Splitter		
	1x M8 Male to 2x M8 Female	
Poles	Engineering No.	Standard Order No.
4	080804LMF00000	120089-0033



Adapter Connector		
	1x M8 Male to 1x M12 Female	
Poles	Engineering No.	Standard Order No.
3	853030	120017-0004
4	854030	120017-0003

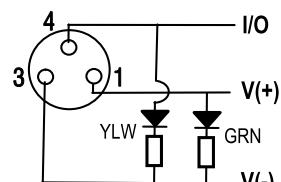


Note:  
M8 male connector thread is fixed.

## Brad® Nano-Change® M8 Sensor/Actuator Connectivity



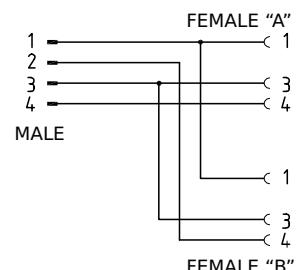
### Nano-Change® M8 LED Connector Wiring



1 - Brown      4 - Black  
3 - Blue

### Y-Splitter Wiring Schematic

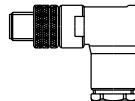
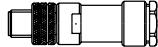
#### M8 to M8 4 Pole



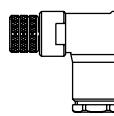
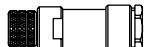
## Ordering Information

### Brad® Nano-Change® M8 Field Attachable Connectors

### Brad® Nano-Change® M8 Sensor/Actuator Connectivity



		Male Straight		Male 90°	
Poles	Max Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	3.5-5mm	N03MA03124	120091-0004	N03MA04124	120091-0006
4	3.5-5mm	N04MA03124	120091-0010	N04MA04124	120091-0012



		Female Straight		Female 90°	
Poles	Max Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	3.5-5mm	N03FA03124	120091-0001	N03FA04124	120091-0003
4	3.5-5mm	N04FA03124	120091-0007	N04FA04124	120091-0009

### Brad® Nano-Change® M8 Closure Caps



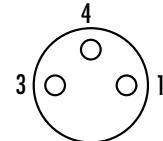
Plastic Closure Cap

To Cover Female	
Engineering No.	Standard Order No.
—	120308-0677



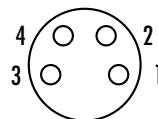
### Nano-Change® M8 Connector Pinout (front view)

#### 3 Pole



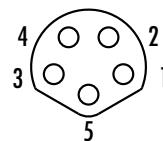
1 - Brown    4 - Black  
3 - Blue

#### 4 Pole



1 - Brown    3 - Blue  
2 - White    4 - Black

#### 5 Pole

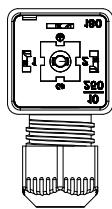


1 - Brown    4 - Black  
2 - White    5 - Grey  
3 - Blue

**The mPm® DIN valve connectors conform to the industry standard of electrical connectors EN 175301-803, which are commonly used with solenoid valves. The new generation of Molex® DIN connectors provides unsurpassed sealing performance, easier assembly and mounting and lower applied costs.**

## Ordering Information

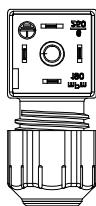
### Brad® mPm® Field Attachable DIN Valve Connectors



Form A External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C28200N2RSN	121201-0034
With Electronic	S28200TC422RSN	121207-0358



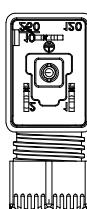
Form B External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C22200N2RSN	121202-0012
With Electronic	S22200TC422RSN	121208-0230



Form C External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C92200N2TSN	121203-0009
With Electronic	S92200TC422TSN	121209-0197



Form Micro External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C25200N2TSN	121204-0010
With Electronic	S25200TC422TSN	121210-0332



Form Industrial External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C29200N2TSN	121205-0012
With Electronic	S29200TC422TSN	121211-0332

## Brad® mPm® DIN Valve Connectors



### Circuit C4 Schematics

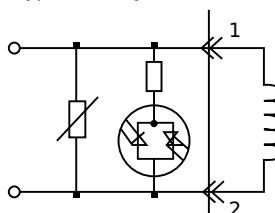
Bipolar yellow LED and VDR to protect supply and switch.

Available voltage rating on C4 circuit:

12, 24, 48, 115 and 230 V AC-DC

12, 24 and 115V AC-DC

(for type 192 only)



#### Note:

The mPm® DIN valve connectors are available in various version, Pole count, housing and electronics. For further information consult our website or automation catalog or your local sales support.

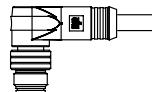
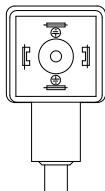
Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

The mPm® connectors with molded-in cable are suitable for use with most types of solenoid. They offer a fast and efficient method of connection resulting in greatly reduced installation time and costs.

## Brad® mPm® DIN Valve Connectors

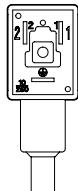
### Ordering Information

#### Brad® mPm® DIN Valve Connectors Over Molded to M12 Male Connector



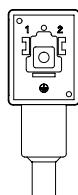
**DIN Valve Connector, FORM A, C4 Circuit, Ground Pos H6/H12**

Length	Male Straight		Male 90°	
	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
.6m	E850B0P12M006	121036-0192	E850B2P12M006	121036-0208
1m	E850B0P12M010	121036-0193	E850B2P12M010	121036-0209
1.5m	E850B0P12M015	121036-0194	E850B2P12M015	121036-0821
3m	E850B0P12M030	121036-0356	E850B2P12M030	121036-0211



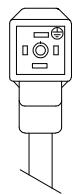
**DIN Valve Connector, FORM Industrial, C4 Circuit, Ground Pos H6**

.6m	F850B0P12M006	121036-0352	F850B2P12M006	121036-0505
1m	F850B0P12M010	121036-0255	F850B2P12M010	121036-0506
1.5m	F850B0P12M015	121036-0822	F850B2P12M015	121036-0823
3m	F850B0P12M030	121036-0257	F850B2P12M030	121036-0824



**DIN Valve Connector, FORM B, C4 Circuit, Ground Pos H6**

.6m	D850B0P12M006	121036-0056	D850B2P12M006	121036-0828
1m	D850B0P12M010	121036-0825	D850B2P12M010	121036-0829
1.5m	D850B0P12M015	121036-0826	D850B2P12M015	121036-0830
3m	D850B0P12M030	121036-0827	D850B2P12M030	121036-0831



**DIN Valve Connector, FORM C, C4 Circuit, Ground Pos H6/H12**

.6m	H850B0P12M006	121036-0295	H850B2P12M006	121036-0832
1m	H850B0P12M010	121036-0296	H850B2P12M010	121036-0305
1.5m	H850B0P12M015	121036-0471	H850B2P12M015	121036-0833
3m	H850B0P12M030	121036-0440	H850B2P12M030	121036-0834



**DIN Valve Connector, FORM Micro, C4 Circuit, Ground Pos H6/H12**

.6m	G850B0P12M006	121036-0406	G850B2P12M006	121036-0836
1m	G850B0P12M010	121036-0277	G850B2P12M010	121036-0621
1.5m	G850B0P12M015	121036-0835	G850B2P12M015	121036-0837
3m	G850B0P12M030	121036-0481	G850B2P12M030	121035-0270

### DIN PUR/PVC Cable Specification

Conductors: 3x0,5mm<sup>2</sup> PVC (Brown, Blue, Green/Yellow)

Jacket Material: Black PUR

Voltage Rating: 300V

Operating Temperature:  
-5 to +90°C (flexing)  
-30 to +90°C (static)

Diameter: 5,5 ±0,3 mm

#### Note:

The mPm® DIN valve over molded cordsets are available in various versions, Pole count, housing, cable, lengths and electronics. For further information consult our website or automation catalog or your local sales support.

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

**Get more insights at: [molex.com/industry/industrial.html](http://molex.com/industry/industrial.html)**

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